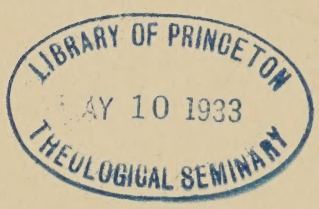

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PSYCHOLOGICAL PRINCIPLES OF EDUCATION

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PSYCHOLOGICAL PRINCIPLES OF EDUCATION

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PREFACE

The improvement of conduct, i. e., the improvement of whatever one does, is education. This is the central theme of the present volume, which was written for beginners in educational psychology. The adoption of this theme required the assuming of a functional attitude toward educational psychology, as well as toward pupils' and teachers' use of it. Educational applications of psychology are made to all levels of learning, elementary, secondary, and collegiate, and the text is, therefore, suitable for normal schools, teachers' colleges, and universities.

Education is a life career. It begins with earliest infancy and normally proceeds continuously throughout childhood, adolescence, and adulthood. The adolescent can not be separated from his childhood any more than the adult from his adolescence and infancy. Nor can schooling exist apart from the learner's earlier life, his contemporaneous out-of-school experiences, or his subsequent career. Education, like life itself, has therefore a longitudinal character as it extends through the span of life; also, like life, it has a horizontal character the cross-section of which is broad or narrow, according to an individual's capacity and opportunity.

In Part I, the individual's educational development in modern society is traced. The bases of conduct, physical and physiological, are set forth with special reference to their use and direction. Experimental evidence and experience with students of educational psychology required the omission

of certain technical neurological materials in this exposition and the inclusion of a simple version of much that has often been neglected. The components of conduct are indicated not as the "separable faculties" of nineteenth century psychology but as interrelated and integrated currents of the progressive adjustment of the individual. These components of conduct are presented as the human functions through which education takes place. The genetic aspects of motivating these functions, the biological basis of motivation, and the processes and results of altering conduct through motivation are discussed as fundamentals of education. A chapter on individual development through socialization completes this genetic account.

Part II presents analyses of the teaching process and indicates the relation of the teacher to pupils of varying capacities and other characteristics. These analyses are accompanied by applications to classroom situations. The principal types of teaching procedures are evaluated in the light of sound psychological criteria of teaching success.

As learning processes are inseparable from curricular activities, Part III sets forth psychological problems of curricula at the different levels of schooling and their relation to what is acquired outside the school. The point of view is that curricula exist solely to aid the learner in his progressive conduct. Psychological issues involved in the school subjects as functional experiences are given as much attention as seems to be warranted in a treatise of this character.

In Part IV, on the psychology of conduct, attention is given to problems of normality and abnormality. Normal conduct is discussed as progressive and, at times, nonconforming activity within certain categories of conduct, rather than merely docile, conforming behavior. In the authors' opinion, ab-

normal conduct is not necessarily undesirable when it departs from the customary but is undesirable when it thwarts progressively better living. The discussion of it is, therefore, pointed toward the amelioration and correction of conduct as a part of the educational process. The final chapter assembles the principles of integrated action which are developed in the earlier discussions.

The authors' indebtedness to experimental psychology and to workers in the different schools of psychological thought is indicated in the discussions and by numerous references. Indebtedness is acknowledged also to our own students, whose reactions to psychological materials have aided in the choice of subject matter and form of presentation.

The bibliographies do not in general repeat the references cited in the text. In some cases, however, references have been repeated to call special attention to certain passages or chapters. Many of the books cited contain extensive bibliographies which will supplement those here given. Our aim has been to select only a small number of readings which will guide the inexperienced student into the vast literature of this subject. It will be seen that certain references corroborate the views here presented, while others supplement by giving different interpretations of psychological data. Recent journal articles are also included. The bibliography for Chapter XI was extended beyond the usual length to include a sampling from writings on the several school subjects.

Francis F. Powers
Willis L. Uhl

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PART I

INDIVIDUAL DEVELOPMENT IN MODERN SOCIETY

CHAPTER I

EDUCATION AS CONDUCT

Conduct as the Basis of Modern Education

Humanity claims and philosophy supplies motives for the continued existence of mankind. By the same authorities, adherence to belief in progress and its desirability is enjoined. Pending an examination of these authoritarian postulates, the desirability of mankind's existence and the idea of progress are forthwith accepted. For this continued existence upon any cultural level, training of the young is required, and, while in training, the young pass from one pattern of conduct to another. The conduct thus manifested conditions the young progressively for more adequate technical controls or higher cultures or for both; this is education. Education is progressive conduct for progressive living.

The process of conditioning as here understood is not simply learning by doing, not merely activity for the sake of further activity. It is instead activity progressively directed toward further progressive activity. The intrinsic validity of what is taken—or mistaken—for progress does not affect the process. The only requirement for the present is that changes which are characterized as progressive changes take place and

that an examination of these changes is in order. The difficulties encountered in undergoing these changes warrant this examination. If the examination is adequate, the psychological principles of education will have been discovered and set forth.

As already implied, conduct, to be educationally significant, depends upon the relation of the conduct to an objective which, as further conduct or as some other form of attainment, has importance in a progressive series of activities. The value of conduct is dependent also upon psychological conditions: the stimulus, the reaction, and the status of the pupil. This artificial distinction between reaction and pupil is made because other aspects of the pupil than the reaction must be treated.

Conduct acquires its maximum educational significance only when it is appropriate for the pupil. Improper grading of the conduct situation for a given pupil can not lead to the desired reaction. As a given reaction must follow a given stimulus, the pupil remaining relatively constant, the reaction must always be appropriate for the stimulus; but the reaction is appropriate only when the stimulus is suited to the responding organism, the pupil. Two possibilities exist: first, the educator can readjust the stimulus; second, time can be allowed for the pupil to become adjusted to the stimulus. Neither of these conditions being provided, the pupil is adjudged a failure; both the pupil and the educational means may, however, be failures. If by readjusting or grading the stimuli the pupil's reactions can be made educationally significant, the readjustment should take place. Otherwise, the pupil can not then, if ever, give the desired reaction.

An example of such readjustments of stimuli and pupils can be drawn from first-year Latin courses. A generation

ago an attempt was made in such courses to acquaint beginners directly with Cæsar's *Commentaries*. To that end the first lesson consisted of an analysis of the first seven words of the *Commentaries,* the second lesson continued with a similar analysis of the succeeding words of the *Commentaries,* and so on throughout the year. Many pupils failed to respond as the protagonists of this inductive method expected them to, and teachers appear to have discovered that the stimulus was inappropriate. Facile reading of Latin comes, of course, only when the reading materials, the stimuli, are selected and organized so that facile reading can be practiced; one learns to read by reading and not by halting analysis. Readjustment of the stimuli has taken place while the pupils remained constant, as far as the school grading of beginners is concerned. Consequently, modern texts present Latin in the simplest sentences that can be devised, and pupils respond with educationally significant conduct. If the pupils are in schools which still use the *Commentaries,* time for the development of a hierarchy of Latin skill and knowledge will have elapsed during a year or two, so that the pupil will have become adjusted to the many of the rigors of Cæsar's relatively difficult text. Many analogous readjustments of stimuli and pupils might be drawn from recent school practice.

The example from Latin teaching illustrates for first-year Latin pupils the formula for readjustment at any given time. This grading of conduct, the stimulus-response situation, is equivalent to the grading of the stimulus so that the necessary response will always be appropriate for the objective of the particular conduct. The pupil remaining constant, the formula is this—the grading of conduct equals the grading of the stimulus. The simplicity of this statement of the

formula must not be interpreted as indicating that any of the parts of the formula are also simple. Instead, the formula requires that educators know their pupils and their educational objectives, and that they select and adapt stimuli so that pupils will yield the desired responses.

Another aspect of grading appears at this point. For educational purposes, general stimuli seem, at certain stages of progress, to render the pupil more likely to yield desired responses than a specific stimulus does. General stimuli are multiplex, and, therefore, they spread; or, to be more exact, they are adapted, by their multiplex character, to the variations among pupils. They present a variety of appropriate stimuli any of which may be adapted to a given pupil. In each unit of group instruction these multiplex stimuli precede the specific stimulus, and gradually the stimuli are refined and made more specific as the more specific characteristics of each pupil are detected. Then the specific stimulus can be selected and employed to build the hierarchy of knowledge, skill, or attitude which is appropriate for the unit of instruction. In opening a new topic to pupils, for example, the stimulus is made multiplex by means of preparatory questions, a general discussion, the "overview," or by some other procedure which enables the pupil to discover his own relationship to the new topic. Subsequently, the pupil, already adjusted to the general nature of the topic, perceives and acts upon the specific stimuli of the conduct situation.

The grading of educative conduct is further complicated by progressive changes in the pupil. When, as with effective drill, a specific stimulus is used, the pupil changes so that his reactions are progressively altered. Motion picture records of such activities as natural dancing or problem solving show that each alleged repetition of a process is only partially a

replica of a preceding response. Not all successive responses are advances beyond a previous performance, but, as long as learning continues, the reactions are never identical. The advancing pupil never does the same thing twice.

The influence of conduct upon the subsequent conduct of a given individual is generally recognized. It is in this respect that one creates, in part, one's own environment. The irritable pupil, for example, in his exhibitions of irritability stimulates certain responses in his fellows. These responses, if typical, are reflexive and, in turn, influence the irritable pupil to further responses of the same kind. The mechanically ingenious pupil, as another example, creates new features in his environment with each new situation which his ingenuity contrives. Likewise, the pupil who acquires a skill, as reading a foreign literature, extends his environment and renders it intelligible. In this case, however, the changed environment is due directly to changes within the pupil and not to changes in other persons or in mechanical structures which the pupil has contrived. In such acquisitions of skill, conduct becomes the influence by which environment is, in its turn, created or extended for the individual. In similar ways, each human being continuously changes his own environment. The intelligent pupil can be described as one who engages in a process of racing with, but never capturing, his own environment; he is an organism which responds appropriately and with discrimination to his environment, being, at the same time, conditioned by his own responses. An unintelligent pupil is, by the same formula, one who gropes zigzag, finally sinking, because his response does not conform with his environment. His stimuli may be inappropriate, but his necessary response is atypical, abnormally slow, or restricted for his age or status.

The pupil is potentially fitted to respond appropriately to many types of stimuli. He responds specifically, however, only to those stimuli for which he has been appropriately conditioned. Many stimuli are overlooked until some one, as teacher, directs the pupil's process of becoming conditioned. The hexagonal form of snowflakes and the magnetic qualities of common articles may pass unobserved; niceties of language may be overlooked; possibilities of coöperative life may remain buried beneath the self-preservative equipment of primitive man; techniques of human performance as displayed in commerce, engineering, household economics, and art may never develop; and the foundations of health may be ascribed to magic unless the secrets of departmentalized conduct are set forth. To the extent that any department of a pupil's conduct is undeveloped, his native infantilism persists, frequently to be glossed over by prejudices, inhibitions, and fears which condition him for no intelligent responses. Hence the school directs conduct into the realms of science, language, social studies, mathematics, technology, art, and wholesome living.

In all forms of departmentalized conduct stimuli are followed by responses. The fundamental equipment of every normal youth insures appropriate reactions when the stimulus is correct. The pupil's level of response may represent a meagre native equipment or a thin veneer of prior accomplishment. The pupil may even be enshrouded in acquired defenses which prejudice him against the proposed departmentalized conduct. He may have been warned to avoid the "difficulties" of mathematics or the "effeminacy" of the arts; his "literary taste" may have been perverted. But, to the teacher, the pupil can never be wrong. Pupil reactions, like the reactions of chemical substances, follow natural laws.

The variables involved, as natural endowment, the effects of parental training and religious instruction, and the suitability of stimuli, are seldom charted; and the pupil's responses may not, therefore, be accurately predicted. Too great emphasis can not, however, be placed upon the thesis that the pupil always makes the right response for his own stage of development. Upon this thesis stands the concept of levels of conduct, and this concept must be understood before educational conduct can be correctly planned. To conduct himself appropriately as a human being the pupil must become conditioned so that he will react correctly to departmental stimuli as far as the legitimate educational objectives can be attained to by the pupil and are, therefore, in the pupil's life. This statement depends, of course, upon the assumption that adequate analyses of successful living show that the several departmental forms of conduct of a pupil's curriculum are necessary for him.

The present discussion of conduct as the basis of modern education will be terminated by a recital of additional basic assumptions about conduct. It is assumed (1) that certain stimulus-response situations constitute appropriate living; (2) that pupils must be conditioned to give appropriate responses for relatively high levels of conduct; (3) that pupils can be analyzed through their responses and that their needs for life can be discovered; (4) that appropriate stimuli can be found and provided for all pupils; (5) that appropriate stimulus-response situations will condition pupils in accordance with valid educational objectives; and (6) that progressively changed or changing stimulus-response situations will yield desirable citizens. These assumptions are necessary regardless of further theories about human existence. One may subscribe to these assumptions and be a literary humanist as

Irving Babbitt, a realistic humanist as Lippmann or Krutch, a neoscholastic as J. H. Ryan, a theist, an ameliorist, a mechanistic technician, or any combination of them. Further ramifications of this point must be left for the philosophers of education.

Educational Relationships

Conduct is the joint domain of psychology, sociology, and education. Although the territories of these studies overlap one another, the three fields are here divided to show briefly the relation of each to the general problem of conduct.

1. *Psychological relationships.* Modern psychology attempts to isolate and study the factors of conduct. In this endeavor psychology assumes the rôle of a natural science, as chemistry, rather than that of a normative science, as ethics. The domain of psychology spreads to analyses and explanations of conduct as natural phenomena, rather than as examples of progress toward a desirable end or norm. Explanations of how conduct takes place and the identification of natural causes of conduct have simplified the statement of many of the problems of education. The simple statement of the conduct situation upon a stimulus-response basis is not, however, simple to the investigator who must know the physics, the chemistry, and the mathematics of conduct. Much of that difficulty lies, fortunately, in that portion of the psychology's domain from which education profits much without bearing the brunt of the toil.

A complete statement of the formula of the stimulus-response situation has not yet been written. Rarely, within the laboratory, is the stimulus simple. One can, of course, devise an experiment in which a subject is required to respond

to known stimuli. The subject may, for example, be required to compare two closely related auditory stimuli of known pitch, intensity, and timbre. In addition to the stimuli of which the experimenter is aware, there may be, however, other stimuli of which he is not aware; stimuli whose potency he could not measure even if he were aware of them. Among these stimuli there may be not only auditory distractions, but also interfering stimuli to which any other sense department may respond. In addition to this obvious condition in which stimuli are wrongly judged to be simple, there are cases in which the temporary effects of antecedent stimuli remain. Such antecedent stimuli may have lead to physiological disturbances, as with subjects who have been drugged; or the stimuli may have been more subtle, as with subjects who have been physiologically disturbed by ecstasy. One may say that, outside the laboratory, the stimulus is never simple. The classroom pupil may sit before his book, and, while gazing steadfastly at it, he may be stimulated more potently by the sound of a classmate's voice or by a passing airplane than by the book. Here, again, physiological disturbances may persist beyond the point of apparent stimulation. Such considerations emphasize complexity rather than simplicity as an attribute of stimuli.

The reacting organism is no less baffling than the stimulus. As stated above, temporary disturbances may complicate the organism as a reactor. In addition to difficulties caused by relatively simple antecedent experiences or potations, the subject may be physiologically disturbed by an abnormal flow of glandular secretions. When one asserts that the reaction is equivalent to the stimulation, one may, therefore, be contending only that one unknown is equivalent to another unknown. The psychologist's identification of the natural

causes of conduct has, perhaps, been correctly steered rather than made simple by the adoption of the scientist's formula. By varying the concomitants of known stimuli, he can identify and evaluate objectively certain stimuli situations which, by other methods, have been only subjectively and unreliably investigated.

To the student of conduct, the effects of reactions to stimuli at any given time upon subsequent conduct are of great moment. For the physiological changes caused by reactions persist. As mentioned above, these changes prevent exact repetitions of stimulus-response situations. The observation of these changes has led to the concept of the conditioned organism. By applying this concept to conduct, psychologists can identify those reactions which most effectively condition the subject or pupil to react in a desired way. The domain of the psychologist includes, therefore, the analysis of this complicated stimulus-response situation. His efforts in exploring this domain have lead to the formulation of the important concepts of complex stimuli, complex reactors, and to the concept of the conditioned organism.

2. Sociological relationships. Conduct as the domain of sociology is best treated as an issue in the emergence of selfhood. Sociology has analyzed reciprocal relationships which exist between the individual and the social groups in which he moves. These relationships, through which one's selfhood appears to develop, have been recognized for centuries in such sayings as, "One is known by the company one keeps" and "Birds of a feather flock together." Holmes, in *The Autocrat of the Breakfast Table,* gave a literary interpretation of the matter in his discussion of the "self-made" man. Better than such a man, said Holmes, is one who descends from a lineage of dignified forebears with impressive

family portraits, fine old books, family silver, and stately furniture. Still, he adds whimsically, one may find that a man with a less noble heritage may, presumably because of superior social interactions, be the better of the two. In either case social interplay is at work, and selfhood emerges from this interplay of social influences. The better the interplay in its variety and its proportions, the better the selfhood that emerges. The better the part taken by an individual, the better will be the society or the group conduct out of which and by which he himself is developed. The individual's formula for emergent selfhood is, therefore, Give your best that your own social groups may, through social interactions, give their best to you. In bargaining for selfhood, one should, however, beware of the possibility that in giving selfishly one may give not one's best but one's poorest. Society can not give to one who fails in reciprocity, for the process of development is an enterprise in which activity is the basic principle. Indeed, the development of selfhood by active contacts with the not-self is the social psychologist's version of Froebel's social activity program. It is the sociological aspect of the larger process of learning by doing.

Man has an enormous advantage over brute in the social development of selfhood. The brute has the present, a very little of the past, and none of the ideal. Man has all these and in a variety which no brute could fathom. From the richness of the past, the young have been regaled, wisely or unwisely, by incidents, ideals, and systems selected as fitting nurture for emerging selfhood. The valorous deeds, the literary and artistic productions, the political life, the ceremonials—these and many other significant results of racial conduct have fashioned every generation that has relived them. Besides reliving the conduct of the distant past, man

reënacts his own social past. The selfhood of pupils is thus in part the product of the past. The importance of the present conduct of pupils is recognized, and it is attested by the strategic educational rôle assumed in modern schools by extracurricular activities. No small part of the value of such conduct lies in its social contributions to selfhood. Furthermore, social life as presented in ideal forms contributes to youth's selfhood. As far as imaginative literature calls forth social responses, as far as plans for the future affect the conduct of persons who give thought to such plans, to that extent do such ideal presentations condition pupils.

Only as far as a pupil moves successfully among social groups is he the reciprocal of the group. He then reciprocates in habits, speech, attitudes, vocational choices, and in personal, economic, political, religious, and fraternal affiliations. When, on the contrary, the group life into which a pupil falls is in any way unfit for him, he may react in any or all these respects, but he does so unsuccessfully. By virtue of such a stimulus-response situation, the child becomes progressively less fit for life as exposure to the group continues. At last he is dubbed a misfit. Social misfits are in this sense the unfortunate victims of unsuitable stimuli. Despite this misfit condition the selfhood of the child develops apace.

By this analysis of the past, the present, and the ideal, sociology shows the relationship of social conduct to the emergence of individuality or selfhood. Some of the implications of this analysis will be canvassed briefly. First, personal and group contributions to morality will be cited. A pupil's morals as indicated by overt acts or otherwise are important components of his selfhood. It is assumed here that one's notions of morality as indeed the moral concepts of a people are derived as conventions, attitudes, and understandings

from social life. If this view is accepted, the pupil who, in relation to life, adopts the position of an innocent bystander misses the social influences, *i. e.* the educative conduct, which alone can produce the moral individual. Such neglect of the past, present, and ideal leads to moral deficiency. Better then it is to shield the child from solitary innocence than from significant, lively social intercourse. The best development comes, according to this view, from much individual deliberation of the best possible combination of wholesome group conduct, high traditions, and virile ideals.

Another implication issues from the relation of an individual to the "mental climate" of the groups in whose conduct he participates. The sociologist's theory of the development of selfhood imposes upon educators the task of finding and providing the best possible mental climate for each pupil. One pupil may find too rigorous a climate in the conventional history course; another may flourish only when stimulated by the bracing challenge of superior, though equable, classmates; and still another may develop desirable qualities of leadership only by participation in bustling groups where activity is intense and forces run counter to himself. Only by such a variety of climatic conditions can the selfhood of all pupils be elicited, and only by varied conditions can each pupil acquire the combination of flexibility and stability required by members of a complex community. In this educational program, means should be found for retaining the tempering influence of "outlanders," in person or vicariously as in foreign literature and history, upon every social group. In such ways overstabilization and extreme provincialism will be reduced, and the group will produce a hospitable climate for the emerging selfhood of children.

A third implication of this sociological analysis arises

from the dependence of common understandings upon social conduct. As misunderstandings grow out of a lack of intelligent social conduct, so correct understandings issue from such conduct. This conduct, to be most effective, must be of the broadest possible range and consistent with the pursuit of intensive experiences in important types of conduct. If, for example, one desires to live an adequate social life, one seeks not only a large number of human beings, but also intimate friendships with persons with whom selfhood is most fully realized. In academic terms, one seeks opportunity for wide exploration, orientation, and scattering and also for intensive and intimate acquaintance with subjects that give the greatest fullness of life. The sociologist's contributions to these aspects of conduct include the concept of the development of selfhood by social experience and analysis of types of conduct which yield the fullest returns in such important issues as morals, common understandings, and provisions for individual differences. These points will be fully discussed later, especially in Chapters V and XII.

Conduct Levels

Curricular organization produces a hierarchy of sequential material. Yet the criteria of what is fundamental are not usually based upon experimental work. Indeed, experiments have shown that materials which have been considered indispensable are sometimes of only contributory value. Levels of school conduct are not fully explained by existing data; they must be explained in part from observations and other results of experience.

The expressions *primary, secondary,* and *higher* education imply not only a chronological and historical sequence, but

likewise a learning sequence in the development of the pupil. There is little evidence to warrant a conclusion that the major gaps in school organization correspond to the major periods of transition either of growth or learning. The divisions of our present organization, with the possible exception of the junior high school and junior college, are the result, not of premeditated planning, but of convenience of the moment.

How clearly marked the nodal points in conduct development may be and the extent to which the main divisions in the educational scheme should correspond to such points is an important question. Recent psychological writers have held for a condition of comparative continuity in both growth and learning. Group curves of learning and growth are gradual and continuous.[1] But the curve of learning, whether it be for individual or group and whether it be straight line or not, does not tell the whole story of the nature of the development of behavior and conduct. If continued experimentation reveals fairly distinct periods in the development of conduct habits, the question of the relation between such periods and the several fairly distinct divisions of school will be of increased significance. From the desirability of a high pupil retention, it seems that the most pronounced breaks in the school organization should not correspond to the nodal points in individual development. Periods of stress in the pupil's life are likely to be eased by relatively even external stimuli, and a change of school type simultaneous with a change in individual development is likely to prove of doubtful value.

While it is not possible to delineate conduct levels strictly in terms of experimental results, it is possible to indicate a

[1] Fowler D. Brooks, *Changes in Mental Traits with Age* (Teachers College, Columbia University, Contributions to Education, No. 116, 1921), p. 81.

few criteria by which such levels may be determined. In general, these criteria are (1) the amount of symbolism, (2) the minimality of the response, (3) the number of conditionings, and (4) the number of possible vicarious functions. Many acts survive in symbolic terms only. Verbalisms are probably the commonest of such survivals. Relatively simple acts or gestures are, for the most part, self-explanatory. But the symbolic sign frequently involves a tremendous syncopation of intervening functions, and for this reason interpretation is demanded. This shortening of the symbolic process also explains the fact that meaning to the individual is pitched solely in terms of his own previous experience, and that verbalisms secure a common response only because the foregoing experience has been common to many people. It is generally recognized, particularly in the field of motor learning, that the organism responds in the initial stages of the learning by relatively gross bodily movements. These movements are abbreviated as skill increases, until fewer muscles are used than were originally involved in the act. Many other responses also become successively less general through a series of conditionings and eventuate in minimal movements. Much social behavior of a relatively high level consists of such minimal movements. The primitive anger response to a rage-provoking situation, for example, has become shortened in the socially adapted individual to minimal movements of the hands or throat, or of the viscera. As an individual's conduct progresses, it exhibits more and more conditionings. Watson has shown that original fear responses are attached to relatively few stimuli.[2] The child or adolescent, however, frequently exhibits fear to a large number of

[2] John B. Watson, in *Psychologies of 1925,* Carl Murchison, editor (Clark University Press, 1926).

situations or stimuli. This tremendous increase in the number of stimuli producing the same response is a function of secondary, tertiary, and higher multiplex conditionings. The pedagogical significance of this experimental work lies in the importance of correct early conditioning for the complex and varied behavior which is later expected. By the number of possible vicarious functions as a criterion of conduct level, is meant the extent to which a given performance meets adequately or plays a part in the solution of various problems. Specific skills have restricted uses, but a general method, attitude, or ideal may influence or guide conduct in a variety of situations. Higher level performances are distinguished from lower level reactions by their greater dependence upon the generalization of experience.

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CHAPTER II

THE BASIS OF CONDUCT

Historical Considerations

A glance at a textbook in psychology or educational psychology, written during the last decade or so, will reveal the almost invariable occurrence of certain chapters. Such chapters attempt to establish in the mind of the student an understanding of the biological and physiological bases of behavior. They embody an adapted discussion of the elementary facts of the neural basis of action. Although the material included frequently has only a remote bearing upon the more practical aspects of human affairs, the assumption seems to be that such facts are helpful to the learner. It frequently happens also that the practical importance of topics is not emphasized or clearly stressed. Ofttimes this physiological and neurological content merely confuses rather than helps the beginning student.

To one who is even casually acquainted with the history of medicine in the last half century, the use of physiological and neurological material in the elementary textbooks in psychology is not in the least surprising. It may even be said that the use of such content is an almost inevitable result of the type of discovery and investigation going on in fields which have always been closely allied to the scientific domain of

psychological investigation. While Kelley[1] was describing certain objective statistical techniques which were to be of value in the study of education and psychology, discoveries of momentous import were being made in the allied fields of physiology and neurology.[2] The cumulative findings in applied mathematics and experimental physiology were bound to have their reverberations in psychology and education. Such was the case. The decade just past has witnessed an unusual emphasis upon statistical technique and the neurological basis of behavior.

It soon became apparent to certain more or less critical educational psychologists that the mere cataloguing of the component elements of behavior was not sufficient to impart to the learner an adequate understanding of human desires, motives, and principles of conduct. It was much as if one were attempting to teach an Eskimo to drive an automobile by enumerating for him the various parts of the machine and having him commit to memory these parts with their allied functions. Those who have been inclined to view askance the extreme emphasis upon the neurological foundation of behavior have pointed out that in many classes which exhibit a rather thorough-going understanding of the practical facts of human existence, say, insurance salesmen, there is a minimum of such technical knowledge. As a matter of fact, adequate treatises upon the nature of human motives and conduct appeared before exhaustive neural explanations of behavior were extant. This point of view is in no sense to be construed as an argument for the encouragement of

[1] Truman L. Kelley, *Statistical Method* (The Macmillan Company, 1923), p. 173.

[2] Fielding H. Garrison, *History of Medicine* (W. B. Saunders Company, 1929), p. 874.

mysticism about the nature and construction of the human machine. It is, rather, the expression of a doubt about whether or not such elementary knowledge of physiology and neurology is of any practical importance in understanding the underlying general principles of human conduct. Furthermore, many of the so-called facts set forth in such introductory chapters deal necessarily with controversial issues. Theories of nerve conduction, graded synaptic resistance, polarity in synapses, etc., are matters which have yet to be demonstrated experimentally in one or another phase.

Thus, it happens that some recent writers have omitted without compunction much of the introductory content on neurology which was customarily found in elementary textbooks in educational psychology. Trow, in his *Educational Psychology,*[3] states in the preface that he has no apology to offer for omitting the customary section on elementary physiology. Such material may well be studied as worth while for its own sake, but future textbooks in educational psychology are likely to delete at least a considerable portion of it as being not directly contributary to the task at hand.

The foregoing comments have particular reference to the detailed descriptions of certain parts of the nervous system which employ technical terminology. There is no doubt but that the learner must have some knowledge of the general nature of the human organism in order to understand scientifically the origins of conduct. The following sections make an effort to state certain facts regarding the human machine without involving highly technical and involved neurological concepts of theoretical nature and slight practical importance.

[3] William C. Trow, *Educational Psychology* (Houghton Mifflin Company, 1931), preface.

Structural and Functional Units

The human organism, like other physical objects, exists in a continually changing environment of varying degrees of complexity. The progressive equilibrium which it maintains with its surroundings is likewise complex and is made possible by the elaborate chemical and electrical processes which are the result of its constituent protoplasm. Furthermore, the distinction between conditions which are external and internal to the organism is an artificial one. Both external and internal situations constitute a reciprocally interacting continuum. For the practical purposes of education, however, one usually speaks of the organism as distinct and separate from the environment.

Human beings, along with all other living objects, are composed of a wonderful substance known as protoplasm. Certain properties of protoplasm which distinguish it from inanimate objects are the bases upon which all education fundamentally rests. Some of these attributes are:

(1) sensitivity or irritability
(2) conductivity
(3) modifiability
(4) capability of reproduction
(5) motility

These manifest themselves through mechanisms which maintain the aforementioned dynamic equilibrium with the environment. For example, the mechanism of sensitivity or irritability is found in the sense organs. The mechanism of conductivity is located in the nervous system.[4]

When viewed as a reacting mechanism, the human body

[4] Charles M. Child, *Physiological Foundations of Behavior* (Henry Holt and Company, 1924), Chapter II.

may be regarded as divided into three general types of specialized structures. Some of these structures are organized to effect *rapport* between the organism and the outer world and are known as sense organs. These, in turn, are divided into three classes, those located on the outside of the body, those located on the inner surfaces of the body, and those buried within the muscles and other reacting mechanisms. Sense organs are acted upon by stimuli of sufficient intensity and quality to produce reaction. It must not be supposed that the sense organ responds to all stimuli which impinge upon it. Figuratively speaking, there are sounds which are not heard and sights which are not seen. Only stimuli which are adequate to produce a response in the sense organ are perceived by the organism as part of its environment. This is not to be taken to mean that people do not vary considerably in sensory acuity. Furthermore, there are many classes of stimuli which, though mechanically adequate to produce a response in a sense organ, are unnoticed. It will be recalled that Conan Doyle had his famous detective character, Sherlock Holmes, base many of his deductions upon facts which could easily have been ascertained by the average man had he directed attention toward them. This is really true to life. From one point of view, education is nothing more or less than the systematic control of sensory stimulation. Education as a systematic control of stimuli is aided by the fact that sense organs tend to be most responsive to situations which vitally affect the organism. This characteristic of sense organs has been described by Smith and Guthrie.[5] Any good text in elementary psychology will furnish a discussion of

[5] Stevenson Smith and Edwin R. Guthrie, *Chapters in General Psychology* (University of Washington Press, 1921), p. 8.

the detailed nature of the sense organs. Such a description is beyond the scope of this treatise, since the relation between the structure of the sense organs and the behavior of the animal as a whole is too remote to be considered.

The response of a sense organ to adequate stimulation is but the beginning of a more elaborate series of events. In order for the organism to respond, an intricate system of connection is needed between the responding mechanism and the receiving mechanism or sense organs. This connecting mechanism is known as the nervous system. The nervous system has often been compared with a complex telephone exchange and, in many ways, it acts like such an exchange. In general, the nervous system is made up of the brain, the spinal cord, and ramifications to the appendages known as the peripheral nervous system. These mechanisms stimulate what is known as "voluntary" behavior. There is also the autonomic nervous system which controls so-called "involuntary" behavior of which digestion would be an example. Although the muscles which are actuated by the autonomic nervous system differ somewhat from the voluntary muscles in both structure and action, there is a tendency to regard the whole of the nervous system as a unit. Lickley has contributed a volume upon the nervous system for the use of students of psychology which will prove valuable reading for those interested in pursuing this topic further.[6] For purposes of education, however, detailed knowledge of the structure of the nervous system is unnecessary.

When the nervous system is considered from the functional rather than the structural standpoint, it becomes evi-

[6] James Dunlop Lickley, *The Nervous System* (Longmans, Green & Co., 1916, 1931).

dent that several items are of interest and importance to the educator. Some of the more important of these are discussed herewith.

1. The reaction hypothesis. Human activity is not spontaneous. One activity leads to another, producing a sort of circular process. But, according to present knowledge, spontaneously generated nervous activity does not occur. All reaction is the result of stimulation. This principle is known as the *reaction hypothesis* and it has been well described by Gates.[7] The reaction hypothesis has important educational implications. It means that, although children may mature in their nervous structures and that learning may be affected by the nature of the maturity, education is primarily a process of stimulation. This does not imply that all such stimulation must be external. The condition of one's own body may serve as a stimulating influence to produce a reaction. For example, internal aches and pains are just as real stimuli as those in the external environment, but they in no way violate the principle of the reaction hypothesis, since they affect sense organs located internally.

2. The "all-or-none" principle. A given structural unit, be it muscle or nerve, when functioning, acts with a maximum release of energy regardless of the strength of the stimulus. Adrian, Fulton, Lickley, Lucas, and others have written upon the point.[8]

This so-called "all-or-none" principle applies to only single functional units—not to muscles or nerves as it is customary

[7] Arthur I. Gates, *Psychology for Students of Education,* revised edition (The Macmillan Company, 1930), Chapter II.

[8] Edgar D. Adrian, *The Basis of Sensation* (W. W. Norton and Company, 1928). J. F. Fulton, *Muscular Contraction and the Reflex Control of Movement* (The Williams and Wilkins Company, 1926). J. D. Lickley, *The Nervous System* (Longmans, Green & Co., 1916, 1931). K. Lucas, *The Conduction of the Nervous Impulse* (Longmans, Green & Co., 1917).

to think of them. Educationally, it is still held that a more elaborate response may be elicited by an increase in the intensity of the stimulus, but this is because more sense organs are affected and consequently more muscles and nerves; it is not because a more vigorous impulse is set up in any given nerve or muscle fiber. The "all-or-none" principle may be likened to the action of a doorbell. When the button which rings the doorbell is pressed, contact is established and ringing takes place. Pushing the bell with greater force does not increase the loudness of the ringing. Either the doorbell rings or it does not. Either a nervous impulse is set up or it is not. When the impulse once begins, it acts in accordance with the principle above stated. The "all-or-none" principle points to a further pedagogical implication. When the maximum number of sense organs which are responding to a given stimulus have been affected or called into play, increases in the intensity of the stimulus produce no further increase in response.

3. The time differential among different kinds of tissues. A differential exists between kinds of tissue in the length of time which a stimulus must act to secure a response. Furthermore, responsiveness to stimulation differs in the same tissue when it is subjected to fatigue, toxic conditions, etc. Gates has discussed at some length the factors influencing efficiency.[9] The functioning of muscles and nerves invariably is accompanied by metabolic activity. The amount of such activity is much smaller in nerves, of course, than in muscles. Therefore, muscles fatigue more rapidly because of the amount of chemical activity and greater consequent production of toxic products.[10]

[9] Gates, *op. cit.*, Chapter XIV.

[10] Alexander Forbes, "The Mechanism of Reaction" in *The Founda-*

4. Summation. Action of a nerve may result from a series of stimulations, any one of which is inadequate to secure a response but all of which, acting serially with brief intervals, are adequate to secure response. This principle is known as summation, and it occurs not only in single nerves but also in an analogous form in gross behavior. Good teaching often consists of the presentation of a series of subliminal stimuli with cumulative effect. Conversely to the principle of summation, action may be prevented by keeping stimuli below the threshold of response. A timid or bashful pupil may be introduced to situations which contain elements likely to produce responses of timidity, but if the situations are so graded in intensity that the pupil is never forced to face one which actually produces timidity responses, the threshold is raised and the pupil has overcome his bashfulness.

5. Impairment and recovery. After the activity of a responding mechanism, there ensues a lapse of time during which normal reaction is impaired. This is followed by another period during which response may be secured but with difficulty. Still later, comparatively rapid recovery occurs. This "refractory" period is important in the development of certain types of skills. If practice periods are piled rapidly, one upon another, results obtained are highly unsatisfactory. For example, in practicing scales upon the piano, if rapid and continuous trials occur with no intervening lapses during which recovery may take place, decreasing rather than increasing efficiency is likely to result.

Acting in accordance with the above stated and still more elaborate principles, the connecting or nervous system carries the impulse to activity to the responding mechanisms:

tions of Experimental Psychology, Carl Murchison, editor (Clark University Press, 1929), p. 162.

(1) muscles, (2) glands, and (3) the central nervous system. In considering reaction, it is perhaps more customary to think of muscular activity. The nature of this activity is readily observable and known to all. Comparatively recent investigations have thrown a tremendous emphasis, however, upon the importance of the activity of glands in the determination of human conduct. Later sections in this discussion will be devoted to a treatment of man's original affective equipment and to the equally important topic of man's original mental equipment. A subsequent chapter describes mental functions.

Functional Principles

To understand the function of the human organism, its tremendous complexity must be borne continually in mind. Descriptions of the structural units of behavior are apt to prove misleading, for they imply a simplicity which actually does not exist. Furthermore, the study of functional principles is beset by even greater difficulties than confront the individual trying to determine the structural basis of conduct. Function, being a process, is more difficult to objectify than structure. The question immediately arises as to whether all phases of conduct can be explained in strictly physical terms. In this connection, mental processes present one of the most perplexing problems. Rashevsky has essayed an intriguing demonstration that there may exist physical systems which exhibit certain characteristics of mental processes.[11] Dunlap, in describing the enormously intricate task of the brain, concludes that, "Functionally, the brain seems to be an integra-

[11] N. Rashevsky, "Possible Brain Mechanisms and Their Physical Models," *Journal of General Psychology*, V (1931), 368–405.

tive or interconnecting organ, and nothing more, except that its integration is habitual." [12]

It is possible to set forth certain principles of human conduct without attempting to resolve completely the mind-body problem or to enter too deeply into theories of function in general. There are listed below certain principles which concern all human conduct. In considering these principles, it should be borne in mind that the human organism is a highly evolved and involved mechanism responding to the action of an elaborate environment. Generally speaking, the organism tends to respond as a whole.[13] This wholeness of response on the part of the reacting animal does not necessarily point to internal simplicity of organization of function. Any given response may represent a compromise. The various possibilities are herewith listed:

1. Facilitation. Two or more groups of stimuli may tend to call forth responses which reënforce each other. When this occurs, the strength of the finally resulting response is enhanced. A man preparing to catch a train has his action accelerated by the discovery that his watch has stopped and the time is actually half an hour later than it appears. Facilitation differs from summation in that the stimuli do not need to be below the threshold or to occur in sequence. The principle of facilitation is useful in school teaching. The sheer authority behind most teachers in the average school is enough to impel the pupil to do his work day by day. Lacking all other reënforcement, however, the work is apt to be lackadaisical and indifferent in character. One problem of good pedagogy is to furnish a large number of facilitating stimuli

[12] Knight Dunlap, "Psychological Hypotheses Concerning the Functions of the Brain," *Scientific Monthly*, XXXI (August, 1926), 106.

[13] *Cf.* Clarence E. Ragsdale, *Modern Psychologies and Education* (The Macmillan Company, 1932), p. 78.

which will tend to make the learning more effective. The problem of motivation is closely associated with that of facilitation. In fact, the psychological principle of facilitation is the mechanism of motivation. The so-called enrichment of courses is nothing more or less than the adding of a number of facilitating situations which tend to make learning more interesting to the learner. A later chapter will discuss the possibilities of facilitating learning in the various subjects in the curriculum.

2. Interference. Incipient responses may interfere with one another. When this occurs both responses may be cancelled. This double elimination of response has been termed "mutual inhibition." Both responses may be given, but with diminished intensity. Finally, one response may predominate and be given at the complete expense of the other but with less intensity. Education has sometimes been defined as the business of preventing or inhibiting responses. This is likely a faulty definition. Preventing a response may or may not be pedagogically desirable. There is sometimes a temptation to think that the sort of teaching which is provided actually inhibits desired responses. A good example of "mutual inhibition" is offered by the proverbial jackass which starved to death standing between two bales of hay. Here the stimuli were so exactly balanced that a response in either direction was impossible. Continual balance between two opposing groups of stimuli with no responsive action, exacts a high nervous toll and results in various forms of abnormal conduct. Further attention will be devoted to this topic in Chapter XIII.

3. Coördination. The action of the nervous system is such as to produce coördinated and integrated responses. In the normal course of events these responses tend to bring the

organism into progressively more successful adjustment to the external environment. Smith and Guthrie have termed this "the regulatory character of responses." [14] If the nervous system were not so organized to produce this unified, focalized behavior, human conduct would be diffused. Activity might be entirely random and serve no utility whatsoever.

The minutiæ of functions which produce coördination are not known. Certain important facts, however, have been determined experimentally. It is known that responses are circular in nature. The action of a muscle group with proprioceptors imbedded within relays to the central system nervous impulses which, in turn, when they have transversed portions of the central nervous system, set up motor impulses and further muscular activity. In a similar fashion, one muscle group may serve to prevent the action of another. When one reacting system stimulates a second and at the same time inhibits a third, the process is called reciprocal innervation.[15] By reciprocal innervation and other processes equally or more complicated, behavior, which otherwise might be random and scattered, is coördinated and directed to the fulfillment of some utility. This type of behavior may be termed conduct.

4. Tonus. Function in the living organism is a continuous process. When muscles act they do not change from a state completely inert to one completely dynamic. Muscles may be said to be always partially active. This is known as tonus.[16] It may be described as partial contraction or activity. It is controlled by nerve action. It varies with physical and emo-

[14] Smith and Guthrie, *op. cit.*, p. 26.

[15] Peter Sandiford, *Educational Psychology* (Longmans, Green & Co., 1930), pp. 28 and 66.

[16] J. F. Fulton, *Muscular Contraction and the Reflex Control of Movement* (The Williams and Wilkins Company, 1926).

tional conditions in the body. It is important in efficiency, particularly in skill.

5. Graded synaptic resistance. Nerve impulses tend to follow the direction of lowest resistance. This is supposed to be especially true at the synapses, which may be defined as points of functional contact between the various units of the nervous system. The passage of the nervous impulse over a tract results in this pathway becoming established, and it is the neurological foundation of habit formation. Resistance within the nervous system is partly an inevitable and partly a controllable process. Even when the organism is in a comparatively active condition as far as ability to respond is concerned, a differential exists in the synapses in resistance. Resistance may be artificially controlled by drugs, fatigue, and shocks of various kinds. Fatigue, in particular, is supposed to have a pronounced effect upon the resistance at synapses and tends to increase it. Increased synaptic resistance because of muscular fatigue may be regarded itself as regulatory to the advantage of the organism. Increased resistance makes response more difficult, and the greater difficulty produces a desire to desist. This has practical pedagogical applications. For, when a curriculum is such as to require inordinately long periods of practice, the resulting fatigue raises resistance and eventually results in dislike for the study itself.

6. Reflexes and instincts. Certain fundamental functional processes which are presumed to be innately determined are subject to little modification. Particular reference is had to reflexes and instincts. Some of the most persistent and sharp differences in the field of psychology center around the definition and interpretation of instinct. There is little agree-

ment among psychologists as to the number of such activities. There is no consensus as to the fundamental nature of instincts, if such there be. A few points, which have an educational bearing, may be mentioned in connection with reflexes and instincts.

The reflex is more easily determined in nature and somewhat less subject to question than the instinct. Reflexes may be defined as innate responses, comparatively invariable in nature, and given in approximately the same fashion to similar stimulation. The patellar reflex is an example. A sharp blow below the knee in the correct place usually produces the same reflex. Allport regards reflexes as being prepotent in nature and educationally important because of the effect which they exert upon the mastering of a given occupation.[17]

Certain distinguishing characteristics of the reflex may be mentioned. First, reflexes are subject to the laws of heredity and are functionally complete at birth. Second, reflexes involve the action of comparatively few neural and muscular mechanisms. Third, alterations of reflex activity are difficult. The reflex act, itself, may be conditioned to various classes of stimuli but variations in the component parts of the act are difficult. Furthermore, any classification of reflexes must be partially arbitrary and based upon a defined criterion. From one standpoint, reflexes may be classified in terms of the level of connection. Thus there are the so-called "lower reflexes" which involve only the spinal cord and the lower brain centers. The removal of the hand from contact with a hot stove would be an example of a reflex involving only lower order nerve centers. Other reflexes, however, involve higher brain centers without the automatic nature of the

[17] Floyd H. Allport, *Social Psychology* (Houghton Mifflin Company, 1924), p. 65.

function being altered. Violent stimuli of various kinds produce immediate response in certain of the vital organs and these may be termed reflexes. Warren and Carmichael have given an excellent description of these phenomena.[18]

It is evident that with the learning capacity which the human organism possesses reflex activity on anything resembling an automatic level exists for but a short time after birth before being overlaid with learned habits. In other words, the reflex usually occurs implicated in an elaborate matrix of activity which is partly learned.

Perplexing as the detailed study of reflexes is, the problem of instinct is still more subtle. Even in the field of psychology the term "instinct" has possessed a vague, allegorical meaning differing from individual to individual and including many elements difficult to verify by an experimental approach. The instinct is presumably a more unified and elaborate response than the simple reflex and is directed toward the adaptation of the individual to an increased intricacy of environment. Among the somewhat more critically minded believers in instinct, certain criteria have been developed for their discrimination. Three of the traditionally accepted criteria of instinct are, first, universality within a given species, second, performance of an act without previous training, and, third, no foresight on the part of the responding organism of the end or purpose which is served. None of these criteria stands up entirely under rigid scrutiny as Allport has demonstrated.[19]

That any human being is a reservoir of a large amount of energy and potential activity can not be denied. That this activity, when it occurs, possesses certain features of integra-

[18] Howard C. Warren and Leonard Carmichael, *Elements of Human Psychology,* revised edition (Houghton Mifflin Company, 1930), pp. 256–264.

[19] Allport, *op. cit.,* pp. 42–49.

tion and utilitarianism is also true. It is likewise comparatively certain that the human infant comes into the world able to perform fairly complex acts without previous training. To postulate as the explanatory principle, however, mystical driving forces which have an almost uncanny knowledge of teleological purposes and ends existing as units within the child is to do anything but clarify the explanation of human conduct. Owing to the nature of protoplasm itself, however, man differs from the stone in the field. There are certain human wants rooted in fundamental protoplasmic urges which, when satisfied, afford pleasure to the organism. The final explanation of the nature of these appetitive drives is beyond the scope of this treatise. It is a matter of common observation, however, that conduct is frequently pointed in the direction of such satisfaction, and this fact itself has certain educational corollaries. For, whether one calls these activities instincts, drives, or prepotent tendencies, they often bring the individual into conflict with certain features of the social environment. It has sometimes been said that the task of education is the redirection of instincts, and the assumption has been that an instinct, of necessity, possesses a certain force from the beginning of the individual's life to the end. This is not necessarily true. It may well be that instinctive activity contains in reality a substantial amount of habit or learning. Regardless of how strong the so-called instincts may initially be, there is the real probability that their final strength is increased or decreased by habit formation. If this be true, the task of education may then be not only the redirection of the original drive which is, of course, possible, but also the prevention of the reënforcement of the original drive by habit formation. For example, granting a sex instinct

or something like it, the task of the individual charged with the duty of sex education is to sublimate or redirect the drive before it is reënforced by asocial habits. The same principle applies to other types of natively reënforced activity.

Original Mental Equipment

A forthcoming chapter will discuss mental functions. An understanding of the nature of these functions depends upon an acquaintance with the physical foundations upon which they are built.

A. the mind-body problem

First, mention may be made of the long standing mind-body problem. As a dilemma of psychological theory, this is partly an inheritance from older philosophical speculation. And yet, there may be differences in educational procedure according to subscription to one or the other of the several possible views of the relation of mind and body. For example, if mental well-being and efficiency are entirely independent of any condition of the physical organism, good or bad, then the dictum, important in school hygiene and recognized even by the ancients that a healthy mind resides in a healthy body, is not accepted. Ogden has outlined seven possible theories or variations of the body-mind controversy. These may be briefly summarized as follows:

1. *The materialistic view.* According to this theory all thinking may be reduced to physical processes. Watson, for instance, holds that all thinking is subvocalization. The materialistic point of view attempts to adhere to strictly objective and experimental explanations of mental phenomena. It

uses no mystical terminology. It recognizes no conclusions which can not be determined either by observational or experimental technique.

2. Dualistic interactionism. According to this point of view there are both a mind and a body which operate in a reciprocal relationship. This theory offers partial hypothetical explanations for many phenomena which are somewhat difficult to explain from a strictly mechanistic and materialistic point of view. Educationally, it is a somewhat difficult option to adopt because the nature of the soul, spirit, or higher intellect is so uncertain as to make curricular activities calculated to affect it difficult if, indeed, education is needed.

3. Psycho-physical parallelism. This is likewise a dualistic theory, or one which holds that there is both a mind and a body. Unlike the interactionists, however, this school of thought holds that there is no connection or interrelationship between mind and body. In its pedagogical aspects, it results in either of two theories of education. One is that the spiritual half of the dualistic make-up is perfect and needs no training. Those holding this point of view become, for all practical purposes, or, at least, for all educational purposes, adherents of the first point of view, namely that of materialism or behaviorism. For, since the spirit is always perfect and need not be educated, all educational measures are directed at the progressive improvement of the purely physical half of the duality. The second point of view holds that both the spirit and the body need education although of completely different sorts. This notion also has profound educational implications. Various theological groups who grant a certain place for the education of the body as such but argue the need of spiritual education, which is both quantitatively and qualitatively dif-

ferent, are found among the proponents of this theory.

4. Epiphenomenalism. This hypothesis views mind as a by-product of physiological processes. Closely related to the theory of epiphenomenalism in its method of explanation is the idea of emergent evolution. As an emergent, mind may be regarded as fundamentally composed of purely physical constituents, but, as a qualitative unit, it has properties entirely its own. This is true in the same way that water, although made up of the purely physical constituents of hydrogen and oxygen, exists as a psychological entity different from both.

5. The double-aspect hypothesis. Both mind and nervous system, with this theory as the explanatory principle, may be real but both may be phantasmagorial phases of an entirely different third phenomenon. It would be hard to formulate an educational plan based upon this theory, since it throws the final explanatory principle back onto a postulate of unknown quantity and quality.

6. Russell's monism. In an effort to resolve the formidable problem raised by the conflict between the dualistic and monistic points of view, Bertrand Russell [20] has attempted to describe a physical quantity which meets the demands of both sets of facts. This "neutral monism" seems to be a substance which may be affected in such ways as to obey either psychological or physical laws. This theory has few specific educational applications.

7. The error-of-words theory. According to this point of view there is one set of facts which is being described by two sets of individuals—those experiencing the sensations and

[20] Bertrand Russell, *Philosophy* (W. W. Norton and Company, 1927), pp. 25ff.

using the language of introspection, and those observing and hence employing the language of experimentation or observation.[21]

B. BASIC MENTAL CONCEPTS

Although some of the above stated theories are so abstract as to have few practical educational implications, the problem of whether conduct is predominantly physical, mental, or a combination of both in nature is not an insignificant one. The principal difference between a people whose primary educational equipment consisted of gymnasia and the Beating Friars of the Middle Ages was a difference in point of view as to the importance of physical or spiritual exaltation. As a matter of fact, history furnishes abundant examples of those who have believed not only that the body was unnecessary to a true mental or spiritual development but also that physical debasement furthered spiritual growth. Practical experience seems to have demonstrated that the most fruitful point of view for the practical school man is an empirical one based upon both observation and experimentation regarding the human organism as highly complex, progressively adjusting and adapting to its environment. The term "mental" is reserved to describe certain of the phenomena which this progressively adapting organism manifests in the course of an increasingly involved conduct. Certain basic factors may be enumerated.

1. Heredity. Present scientific opinion inclines definitely to the belief that mental ability, at least in certain of its fundamental aspects, is inherited in the same way as physical

[21] C. K. Ogden, *The Meaning of Psychology* (Harper & Brothers, 1926), pp. 20–27.

traits. This, too, is not a new idea, but the most interesting and objective substantiation of it has been comparatively recent. Regardless of how intelligence is defined, certain of its basic factors are the products of biological processes. Pintner tends toward the opinion that environment has been overstressed as an explanatory principle in the development of children's conduct.[22] Although there are tremendous educational possibilities, the potentialities of which are seldom approximated, there still remains the fact that individual differences in mental equipment are probably as great as those in physical. Thus each individual's conduct is circumscribed at the beginning by factors of biological inheritance. The factor of individual differences is now a well-recognized one in the organization of all school curricula, and there are few schools which start with the assumption that children are absolutely equal in their foundational mental ability to do school work.

2. Protoplasmic properties. Biological philosophers agree in holding that the true nature of protoplasm is as yet not understood. Jeans [23] has described a few of the successful experiments to create synthetically the equivalent of various products of the body chemistry. These experiments, however, have been successful on only the most elementary levels and all the more complex products of the human body chemistry are as yet unduplicated in experimental chemical procedure. Thorndike has emphasized the place of protoplasmic wants and their satisfaction as high in the scale of factors which are fundamentally concerned with the influencing of human con-

[22] Rudolph Pintner, *Intelligence Testing* (Henry Holt and Company, 1923, 1931), pp. 204–224.

[23] James Jeans, *The Mysterious Universe* (The Macmillan Company, 1932).

duct.[24] He contends that, because of innate factors, some environmental states are organically satisfying and others annoying. From these states of satisfaction and annoyance, human likes and dislikes grow. Being with other human beings, being with familiar rather than strange objects, moving when not tired, and resting when tired, would be regarded by Thorndike as examples of originally satisfying situations. Bitter food substances, interference with orientation, hunger, being the object of unfavorable cynosure, would be considered natively grounded aversions. There is undoubtedly considerable truth in the point of view that certain situations are originally unpleasant to practically all organisms at birth or soon after. Animals on all levels of the phylogenetic scale exhibit aversion tendencies when the environment becomes highly unfavorable. One of the difficulties, however, with attempting to take cognizance of this principle when organizing curricular activity is the fact that, although there may be natively grounded likes and dislikes which profoundly affect behavior or conduct, post-natal or even pre-natal conditioning begins so early and has so many ramifications that, by the time the child is of an age to enter school, it is extremely difficult to distinguish between original and acquired likes and dislikes. In the case of the individual child this is not necessary. There is a practical situation, and the only alternative is to take the child as it is and make the best possible use of previous experience. As a general interest, however, it would be valuable to know these originally satisfying and annoying situations. With such knowledge definitely in hand, the instruction of parents in the early

[24] E. L. Thorndike, *Educational Psychology,* Volume I, *The Original Nature of Man* (Teachers College, Columbia University, 1913), p. 123.

training of children could be made more scientific and efficient, and the school problem simplified through adequate preschool training.

3. Sensations and images. Mention has been made of the sense organs as one of the three divisions of the acting human mechanism. The results of the action of these organs constitute a basic component of mental life.

Investigators in the field of psychology have never been able to come to any satisfactory conclusion as to the essential nature of sensations, perceptions, and images. The basis of behavior is relatively simple to determine in comparison with the effort to determine the fundamental elements underlying higher mental life. Previous to the time of John Locke, the doctrine of innate ideas was widely accepted. According to this doctrine the task of education is comparatively simple and consists solely of bringing forth ideas or thoughts which were already latent within the organism. The famous sentence of Comenius, "Nihil est in intellectu quod non prius fuerit in sensu," sounded the keynote of later opinion which has persisted until the present time.[25]

It has been customary for certain psychologists to speak of an ascending hierarchy in the field of mental life. In this hierarchy sensation is regarded as the lowest step. Sensation has been defined as the most simple mental process or unit taking its rise in the simple stimulation of a sense organ with resultant nerve action. Perception is the localization of the sensation with especial reference to external sources. An image is a partial reproduction of a percept.

[25] For further reading on this point see F. E. Bolton's chapter on "Sensory Education," Chapter XVII in *Principles of Education* (Charles Scribner's Sons, 1911), pp. 431–464.

The sensations upon which images, percepts, and mental life in general are based exhibit certain attributes. These are (a) quality, (b) duration, and (c) intensity.

Among the perplexing problems rising in connection with any study of sensation and images are the following:

(a) *Technique of experimentation or investigation.* The study of mental life requires the use of a technique known as introspection. Introspection, which means literally "looking within," is a technique which is predominantly subjective. One person does most of the observing except in so far as the use of laboratory apparatus may supplement or check results. Because of the imponderability and lack of reliability of some of these subjective observations many psychologists refuse to accept the data arising therefrom as possessing any value. Experiments on the taking of court testimony certainly do show that individuals are apt to vary in perception of objects within the immediate range of their sensory experience, not to mention inability accurately to state what is proceeding internally. But there is a field of knowledge concerning which the individual himself is best informed. Furthermore, a technique of introspection has been developed and refined which has resulted in a much better type of data than those which would result from the report of a completely untrained observer.[26] Despite the difficulty in the way of the investigator using the technique of introspection,[27] some valuable results have been secured by it.[28]

[26] For details, see E. B. Titchener's *Experimental Psychology* (The Macmillan Company, 1901), and *Textbook of Psychology* by the same author (The Macmillan Company, 1919).

[27] For a more elaborate description of criticisms of the introspective technique see Gates, *op. cit.*, pp. 17–21.

[28] John P. Nafe, "The Sense of Feeling," Chapter IX in *The Foundations of Experimental Psychology,* Carl Murchison, editor (Clark University Press, 1929).

(b) *Imageless thought.* There is the problem of whether mental and thought processes are made up entirely of image elements; *i. e.* whether it is possible to have imageless thought. Certain authors hold definitely that there are higher cognitive operations of the mind and intellect which transcend entirely the field of sensory experience and are suprasensuous in the truest sense of the word.[29] Great as are the difficulties encountered in the use of the subjective introspective technique, even more formidable obstacles confront the individual who attempts to describe and analyze transcendental mental phenomena. The so-called "faculty of thought" which exhibits a distinctly supersensuous element is not herein included as an explanatory principle. As in the case of certain of the body-mind theories, the attempt to discover the true nature of such a faculty involves one in speculation beyond the scope of this treatise.

4. Imitation. Mention has been made of the place of instinctive drives in determining physical conduct and its mental derivatives. The difficulty in explaining many types of conduct on the grounds of innate instinctive causality has been briefly stated. Some of the same objections which are encountered in explaining conduct in terms of instinct apply also to imitation.

There is no question but that a whole series of conduct phenomena exists which requires some special type of explanatory principle. Furthermore, these types of conduct are important for education. Younger children are supposed to imitate the habits, good and bad, of their older brothers and sisters and thus have their own future conduct determined. One is taught a new golf stroke by being told to watch the

[29] See the discussion on "Intellect and Sense" by Michael Maher, S.J., in *Psychology* (Longmans, Green & Co., 1926), Chapter XII.

professional execute the stroke correctly and imitate the motions. If one stops on a street corner and stares upward into the air, passing pedestrians will stop and do likewise though there is no obvious reason for so doing except the stimulus offered by the person engaged in this activity. The bell-wether jumps over the fence and the other sheep follow. These and hundreds of other similar behavior phenomena have often been explained by a principle known as "innate imitation." Likewise, in the sphere of mental function, a person's attitude toward a given situation or series of situations is supposed to be influenced by such attitudes as are held by others. For example, children are likely to have the same religious affiliation as their parents and this is often explained on the grounds that they have imitated their parents. If this be correct, the implications for education are clear. All that is necessary is to have a correct model for children to imitate.

Closer analysis shows, however, that, although the conduct of one person closely resembles that of another and that proximity in time and space account largely for such types of similitude, there is considerable objection to holding the point of view that the imitation is innate. The extent to which we can make our golf stroke like that of the professional player's depends not only upon our observing him and exercising some power of "imitation" but also, upon the extent to which we have had the foundation, skills, or abilities on which the so-called imitation depends. Furthermore, even action which may properly be termed imitative can never be regarded as an exact duplication of that conduct which it resembles. Differences exist which are based upon both the discrepancies in the organization and functioning of the reacting mechanisms themselves and upon inaccuracies arising from errors in the

process of transformation. The more complex the act and the greater is the number of subsidiary skills necessary to its performance, the greater the difficulty of imitation. To refer again to the sheep, what actually happens is that all the sheep get over the fence but they do not all get over the fence in exactly the same place or from exactly the same place in exactly the same way. About the most that can be said is that they have all transferred from one side of the fence to the other, and to describe this as calculated imitation would be stretching the point. Even in a comparatively simple act of this kind, changes in method appear. Suppose one attempts to master a complex fingering on the piano by watching someone who knows it do the scale. One observation is usually not sufficient and the observer frequently must ask for numerous demonstrative repetitions of the component parts of the act before finally mastering the performance. If, however, one knew all the component parts, a single observation might be sufficient to get the articulating passages and the scale could then be played correctly after few observations. It might then be called imitation. What is commonly termed imitation is usually of this sort. Responses which resemble rather more or less closely the situations which called them forth are called imitative.

That so-called imitative activities depend in part upon learned basic elements is illustrated no better than in a genetic study of language. It has been believed by some writers that a child learns language by listening to the sounds and imitating them directly. This is only partially true. Previous to the process of imitation the child has had a great deal of experimentation and practice with the sounds. This practice has gone on over a considerable period of time until the rudimentary elements necessary to the acquisition of any language

have been mastered. It may be noticed in given individuals by peculiarities in their speech which date back to some early time.[30]

In considering the educational implications of imitation, therefore, it is necessary to bear in mind the following points:

(a) Imitation is not a generalized innate capacity which enables an organism directly to approximate observed action.

(b) Imitative action is never an exact reproduction of that upon which it is patterned.

(c) Imitation can not be expected to be educationally profitable until the foundation skills have been practiced.

(d) If imitation depends upon the acquisition of learned foundational elements it is important to give the child as wide a range of experience as possible as a basis for later activity which will be learned upon an imitative basis.

(e) Too early crystallization of habit in children should be avoided if possible, for rigidly fixed habits interfere with the process of free imitation which is essentially one of synthesis of already acquired elements.

(f) A condition of imitation is motivation and what appears to be the "imitative" essence of a response may in actual fact be merely an impulse toward a course of action being pursued by others.

Original Affective Equipment

Merely to state the structure of any machine, is to give an incomplete picture of its entire nature. The view is fundamentally static. One of the most misleading types of descrip-

[30] Francis F. Powers, "Psychology of Language Learning," *Psychological Bulletin*, XXVI (1929), 261–274. See also Smith and Guthrie, *op. cit.*, pp. 87–89.

tion of the human organism is that which takes up the parts, one by one, with no effort to portray the synthesized product as a functional unit. A purely structural description is also apt to be given of behavior. This is done when units are presented discretely, as for example, a description of the stimulus-response mechanism, and no effort is made to portray the conduct of the individual as an acting entity. Although in the final analysis function may resolve itself into structure plus spatial and temporal attributes, for practical educational purposes it is valuable to describe the conduct of individuals in terms of the whole human organism acting in characteristic fashions.

Regarded merely as a machine, the human body is capable of performing certain types of activity. These may be classified and described in various ways. Conduct may be regarded from the standpoint of the physicist and described in terms of components of forces, etc. Again, it may be viewed from the standpoint of the chemist and interpreted in terms of the physiological and chemical changes which occur during the course of behavior. Or, again, it is possible to combine all these descriptions given from various points of view and offer a composite of human conduct. Even with this composite description, the complete study of conduct has not yet been made. For the human organism contains within itself an equipment which influences action fundamentally and vitally changes and regulates the mechanical functioning involved in conduct. At times this regulatory mechanism is concerned with the process of maturation which it controls and directs. At times it is concerned with the speeding up of reaction in general while, again, it may become manifest in types of conduct which are termed emotional. Reference is had to the glandular organs of the body. A thorough descrip-

tion of the physiology and functioning of the ductless glands is beyond the scope of this discussion. Furthermore, the important facts with relation to the functioning of the ductless glands may be given in their educational implications without a detailed statement of the structure of the glands themselves.[31]

The effect of the action of the ductless glands upon conduct is profound. It is closely connected with emotions as generally understood. It is related to the problem of motivation in school activities, which, in turn, depends upon the emotional matrix of the individual's make-up. It is connected with the problems of crime and abnormal social conduct. On this point Berman maintains that conduct is the result of conflicting impulses which are, in turn, the outgrowth of glandular action.[32] Berman, perhaps, has a more thoroughgoing conviction as to the wide extent of the influence of the ductless glands on behavior than some psychologists. Conclusions of the sort at which he arrives are not thoroughly founded in experimental results. In general, however, the influence of the products of the ductless gland secretions is conceded to be profound. The influences which the ductless glands exert on human conduct may be summarized as follows:

1. The hormones (products of the ductless glands) may intensify reaction. Thus, in conditions of emergency they reënforce activity and produce a condition of temporary resistance to shock.

[31] Those interested in reading the detailed description of the structure and function of the ductless glands should consult some such volume as *The Biology of Internal Secretions,* by Francis X. Dercum (W. B. Saunders Company, 1924), or copies of the *Journal of Endocrinology* for descriptions of experimental work in the field.

[32] Louis Berman, *The Glands Regulating Personality* (The Macmillan Company, 1922), p. 274.

2. The action of the glands in secreting their product is subject to the process of conditioning. Since education is fundamentally a process of conditioning, by inference the "education" of the glands which control violent emotional reactions is an important component of any educational program. Anger responses, for instance, which depend upon the action of ductless glands, may be given in response to various types of situations or stimuli.

3. Gland action influences materially the temporal aspects of conduct. In other words, behavior may be speeded up by gland action. The speeding up of action is not due to an increase in the speed of conduction in the nerves themselves but rather to the fact that gross bodily behavior is more vigorous. A man walking through the woods has his pace accelerated by the sight of some wild animal which produces emotional responses and reënforced and accelerated behavior. Motivation is closely allied to this principle. Physiologically speaking, the problem of motivation is to secure controlled action of the ductless glands. This, in turn, produces the results above described.

4. Abnormal activity of the ductless glands, whether it be hyperactivity or subnormal activity, produces behavior which may alter the progress of the child in school. An excess amount of thyroxin may produce a child who is overly nervous, excitable, irritable, and consequently a disciplinary problem because of inability to settle down to consistent performance of tasks requiring concentration and sustained restraint. An under secretion of thyroxin, on the other hand, may produce just the opposite, a sluggish, lethargic, and thoroughly indifferent student. The special therapy of the ductless glands is beyond the duties of the ordinary classroom teacher. Whenever the classroom teacher has reason

to suspect in pupils glandular disorders, such as cretinism, which frequently are not detected in the home, a physician should be consulted.

Environment

The final decision as to the comparative parts played by nature and nurture in the determination of conduct, both physical and mental, has not yet been rendered. Certain psychologists hold that, barring the extreme ends of the distribution of intelligence scale and untoward events, such as injuries at birth, people are born with nearly equal potential equipment for learning.[33] If all people are born equally able to learn, emphasis is thrown heavily upon the environment in the learning process and the task of the school is predominantly not one of appealing to inborn tendencies but of controlling and organizing stimuli or environmental influences. There are those who maintain, however, that, given a reasonably stable and favorable environment, innate factors are predominantly responsible for the final product. Kelley, bringing to bear on the problem his adequate knowledge of research technique and statistical treatment, has given a thoughtful discussion of the influence of nurture upon native differences. He partially summarizes his findings in the following statement. "No single issue is more worthy of further research than the outstanding finding that, on the whole, nurture tends to eliminate idiosyncrasy; that, on the whole, children are less *tabulæ rasæ,* less products of a common mold, than adults." [34] The points indicated by Kelley in this

[33] For an elaborated discussion of this point, see John B. Watson in *Psychologies of 1925,* (Clark University Press, 1926).

[34] Truman L. Kelley, *The Influence of Nurture upon Native Differences* (The Macmillan Company, 1926), p. 31.

statement are worthy of special note. Their implication is that, while common opinion sometimes views children as being born alike and being made different by the process of education, actually there is a chance that children are born with somewhat sharply marked differences and that education produces a similarity because of its stereotyped nature. Thus the *tabula rasa* stage of development may be adulthood instead of childhood.[35]

Although the evidence is not yet complete, present findings seem to warrant the assumption on the part of the school man that differences in original mental equipment exist in sufficient amount to justify differentiation in the educational process calculated to care for the same. That what may seem to be original mental differences at the secondary level of education may actually be the result of training can not be denied. But evidence points to differences in fundamental mental equipment which equal if not parallel the physical.

Turning for a moment to the study of the individual, the rôle played by the environment is clear. Just as a piece of oak may become the keel of a boat, the handle of a hoe, or part of a desk, so may human material of a given quantity and quality be turned to a variety of ends. People are not the same in the ease with which they become adapted to uses or purposes in the same way that the wood does. Regardless of the differences, mental content and attitude depend partially upon forces from the exterior to which the individual is subjected in the course of his progressive adaptation to environment. Thus, a continuous and reciprocal relationship exists between the organism and the environment. When an

[35] *Cf.* V. A. C. Henmon and W. F. Livingston, "Comparative Variability at Different Ages," *Journal of Educational Psychology,* XIII, 17–27, January, 1922.

individual has failed to adjust to a situation, the failure may be stated either in terms of some deficiency in the environment or some inadequacies in the make-up of the organism itself. Part of the task of education is to increase the ease and effectiveness with which adjustment is made to a complex environment. When difficulties occur, remedial measures may be directed either toward the organism or toward the environment depending upon the diagnosis of the trouble.[36] A case of continued maladjustment, such as cretinism, in the face of favorable external conditions, for example, may be remedied by changing the fitness of the organism and leaving the environment unaltered. There is a long list of defects such as poor eyes, poor hearing, defective nutrition, cases requiring orthopedic attention, etc., in which changes in the fitness of the organism, not only improve mechanical adjustment to life situations but alter mental content and attitudes as well. Special attention is called to this latter point in view of an ensuing discussion on mental functions in Chapter III.

Given a perfect organism responding in a normal way, changes in environment may produce organismic differentiations which render life ineffective. A common example may be seen in the blocking of responses. When an organism is responding, or is in readiness to respond in a certain fashion, blocking of the response tendency has a pronouncedly detrimental effect upon emotional and mental organization. The mental response is usually one of annoyance which, in turn, influences forthcoming response tendencies, perhaps making them antagonistic and these response tendencies, in turn,

[36] For a full discussion of the reciprocal relationship of the organism and its environment, consult Lawrence J. Henderson's *The Fitness of the Environment, an Inquiry into the Biological Significance of the Properties of Matter* (The Macmillan Company, 1913).

produce by social induction an antagonistic action on the part of those toward whom the action is directed. This circular process illustrates the extremely close relationship obtaining between the organism and the environment to which Henderson has referred.[37] The same thing is true of schools. As external environment, schools differ in type. Frequently a pupil who changes from one school to another is forced to make extensive adjustments in order to find himself well adapted to the new environment.[38]

Original Social Equipment

The educational problem of conduct is to adapt the animal to a complex environment. This environment consists, primarily, of three different parts: objects, people, and the organism itself as its own environment.

To the solution of the problem arising in connection with this adjustment, what does the human individual bring of equipment and technique? Mention has been made of the qualities of protoplasm, the mechanical nature of the human organism, and some of the ways in which it acts in a predictable fashion. Adjustments to the world of objects will be discussed at length in Chapter X. Learning depends upon the neural mechanism which has been described above. What does man bring to the problem of adjustment to society or the congregation of his own fellows?

If one travels over the face of the globe and views people as they exist in different times and climes, the picture encountered is one of people living together in groups, working

[37] Gates discusses the results of the thwarting of cravings, *op. cit.*, Chapter VII.

[38] Francis F. Powers, *Character Training* (A. S. Barnes and Company, 1932), p. 3.

together, playing together, fighting together. Man seems, indeed, to be a social animal. Why? Surely the universality of man's quests and preference for the company of his peers is good evidence that there is some strongly motivating force which compels him to be found always in groups. An obvious, perhaps a too obvious, explanation is to say that man is possessed of an "instinct of gregariousness." Among the psychologists whose efforts have been directed toward the cataloguing and description of instincts, the instinct of gregariousness has invariably occupied a sure place. But, as an explanatory principle of the original basis of man's social conduct, it leaves much to be desired.[39] The needlessness of a mystical instinct of gregariousness as an explanation of man's social conduct has frequently been pointed out. Folsom has well stated the case for considering man's social habits as ordinary learning products and not the result of the operation of some social instinct.[40]

The congregating of men in groups offers a good example of the way in which the regular laws of learning explain apparently instinctive action. In the very nature of the case, the human infant is surrounded by others of its kind from birth onward. Ordinary habit formation, taking place according to established principles of learning, sets up the attachment of the child for its fellows. The idea that it is innately satisfying for human beings to be with other human beings is based upon observation of individuals so far past the state when it would be possible to tell the actually innate factors that the conclusions are valueless. There is no ex-

[39] For a description of the different notions of the instinct of gregariousness, see Gardner Murphy and Lois B. Murphy, *Experimental Social Psychology* (Harper & Brothers, 1931), pp. 6ff.

[40] Joseph K. Folsom, *Social Psychology* (Harper & Brothers, 1931), p. 128.

perimental evidence on children taken immediately after birth, separated from their fellows, and noted as to reaction, to guide in determining how children actually would act if they were brought up entirely apart from the company of other human beings. As a matter of fact, such sketchy evidence of an unscientific sort as is at hand, consisting of isolated cases of individuals who have spent a large part of their lives in solitude, leads us to suspect that the reverse may be the case. Of course, this may be explained by saying that the instinct of gregariousness is atrophied because of lack of use.

Higginson, in his *Fields of Psychology,*[41] which may be read in connection with practically all the points discussed in this chapter, has listed the following reasons why human beings tend to assemble in groups:

1. The intellectual. This is based upon an intelligent realization that more may be accomplished by groups than by individuals.
2. Gregariousness. The objections to this explanation have already been stated.
3. Sexual and parental.
4. Food-seeking or hunger.
5. Fear.
6. Self-assertion and submission.

The complete explanation of man's social behavior probably lies in a combination of the elements implied in intelligent association plus the biological urges.

Along with the instinct of gregariousness as an explanatory hypothesis must be placed the so-called "group mind." This has formerly been regarded as one of the important factors of man's original social equipment. Its operation gov-

[41] Glenn Devere Higginson, *Fields of Psychology* (Henry Holt and Company, 1931).

erned his behavior in the presence of a fellow. At its worst, the group mind has been supposed to control the actions of mobs, riots, etc., and, at its best, to inspire the noble sentiment of patriotism. Experimental evidence extends little hope for belief in its existence. Man certainly acts differently in large crowds than singly. He acts differently in small groups than in large groups. But no explanatory principle of the group mind is necessary. For the environments themselves have changed. This, in itself, is enough to alter the response. Nor does the heritage of the past come to mind through the inheritance of a group mind. Social heredity does not need this explanatory principle to account for all of the acquisitions and superiorities of modern man over certain of his predecessors. The human infant starts at an advantage, not because he has inherited memories of past racial achievements but because of his power of learning and the fact that the knowledge has been preserved and is at hand to be acquired. In adapting the child to the complex problems of modern society the school has exactly the same sort of original equipment to work with that it has in adapting the child to all other learning situations, no more and no less.

The Influence of Maturity upon Conduct

It has sometimes been stated that teachers take credit for changes in the child which are the result of sheer maturity or innate development. Especially during the formative years it is true that the child who enters a grade at the beginning of the year is not the same child as the one who leaves at the end, and would not be, entirely apart from whether the teacher were part of the environment. The normal process of growth and maturity effects changes which materially in-

fluence the conduct of the individual. Judd has listed four fundamental types of maturity.[42]

(1) Social maturity,
(2) Intellectual maturity,
(3) Maturity in behavior, and
(4) Maturity in attitudes.

With all of these types the school is concerned. It has been customary to think of the school as being concerned primarily with the guidance of the intellectual training of the child, but the modern tendency is to devote increased attention to the problems of social and attitudinal maturity and growth. Homogeneous class grouping, for example, has been viewed as almost a panacea for the curing of the intellectual ills of the pupils who are competing with those of different abilities than themselves. Homogeneous grouping was designed primarily to facilitate intellectual maturing. Practical experience with homogeneously grouped classes, however, has indicated that, while the student may advance more rapidly in intellectual growth, the social environment in such classes is enough unlike actual life conditions to result in one-sided development, particularly if homogeneous grouping has been the characteristic situation throughout the entire period of a child's school training.

Although the process of maturity as a matter of course produces changes which fundamentally affect conduct entirely apart from the educational procedure, it must not be supposed that maturity necessarily guides or controls conduct in a way which is socially advantageous. Even in the case of purely physical maturity concerning which little need be done in the case of the normal boy or girl, extraneous in-

[42] Charles H. Judd, *Psychology of Secondary Education* (Ginn and Company, 1927).

tervention is sometimes necessary. For example, gland deficiencies which are resulting in delayed maturation or imperfect maturity may be taken care of by gland feeding. Brooks gives a good description of the various kinds of maturity.[43] He lists the following:

(1) Chronological
(2) Anatomical
(3) Physiological
(4) Mental
(5) Social
(6) Pedagogical
(7) Emotional

A pertinent consideration is whether or not various maturing functions develop concurrently and simultaneously, beginning at the same time and ending so. A further question is whether or not maturity takes place by a series of subdevelopments or is a "saltatory" process. It was formerly held with considerable vigor that various phases of maturity spring into being at given times variously distributed throughout the life of the individual, blossom for some time and then die away. This has been known as the "saltatory theory." According to this point of view, there are also nascent periods of learning or times of optimum advantage for the teaching of certain subjects. Without going into a detailed consideration of the merits and defects of the various theories of the nature of maturity, it may be stated that the present consensus seems to be that maturity is a comparatively continuous process. Sex interests, for instance, which seem to flourish during the period of adolescence and come into being with comparative suddenness, actually are the result of a growth which has begun at birth or before and progressed continuously until the time of adolescence. Often what appears to be the sudden appearance and maturity

[43] Fowler D. Brooks, *The Psychology of Adolescence* (Houghton Mifflin Company, 1929), p. 138.

growth of some function is the culmination of a continuous growth which has proceeded over a considerable period of time.[44]

Maturity, then, may be truly listed as one of the bases of conduct. Physical growth or maturity which alters the size, proportion, and strength of the body from childhood to adolescence and adulthood lays the groundwork for a different type of physical conduct. Certain changes in the nervous system and the brain are providing for the functioning of the mature mental operations. Science has not yet given the exact answer as to the relation between the maturation of certain units of the nervous system and the ability to carry on abstract thinking.[45] Maturity is partly internally conditioned and partly externally conditioned. It is beyond the scope of this treatise to give the complete story of maturity as internally controlled.[46] On its external side, however, maturation is closely allied with learning, the two operating as mutually interdependent phenomena. Learning depends upon the maturation of certain parts of the organism for its successful occurrence and the matured organism, in turn, waits for changes in external conditions before it can go through conduct termed learning. It is with maturity as an adjunct to facilitation of learning that teachers are primarily concerned. Very few people now believe that maturity through its own efforts alone will be enough to produce an individual trained in the way which modern society demands. Effective teaching depends partially upon the teacher having

[44] For a thorough discussion of these points, see Brooks, *op. cit.*, Chapters I–VI.

[45] For a discussion of this point, see J M. Tyler, *Growth and Education* (Houghton Mifflin Company, 1907).

[46] See H. S. Jennings, *The Biological Basis of Human Nature* (W. W. Norton and Company, 1930).

a knowledge of the type of changes which are occurring within the organism during the period of adolescence in order that teaching may be made more appropriate to the level of development.

Individual Differences

Legal theory treats of all men as free and equal. Psychological experimentation actually finds them vastly different in the forces which they can muster in the struggle for existence. The school teacher must deal with the child described in terms of psychological experimentation and not of political theory.

Individual differences are not haphazard. If an unselected population of large numbers is measured for a defined trait, it is found that a certain order persists in the way in which the individuals distribute themselves. Symbolically represented, this distribution takes the form of the well-known "normal curve of distribution." Because of the assiduous work of an able group of investigators who have been both experimentally and mathematically trained, the properties of this normal curve of distribution are now fairly well understood and formulæ describing it are available.[47]

There is a deceptive allure, however, about these specific descriptions of individual differences based upon the measurement of large groups. A statistical statement of data is a very convenient way of expressing accurately facts which otherwise would have to be described in general terminology. But it must be realized that such a statement is descriptive only of a large group and is of no practical avail in dealing

[47] H. E. Garrett, *Statistics in Psychology and Education* (Longmans, Green & Co., 1926).

with the individual child in the individual class. It may be convenient to know that a given child is in the ninety percentile in intelligence, the fifty percentile in achievement, etc. Such a statement is only partially diagnostic, however, and the teacher's problem is only partially solved with the knowledge at hand. There is some reason to believe that the scientific study of individual differences has been too much concerned with the statement of these general trends and too little concerned with the treatment of the individual child. Thorndike has long since recognized the great importance of this latter point and has stated it on numerous occasions, emphasizing the point that a child is understood individually only when its exact rating in every significant trait has been given, and that it is properly trained only when teaching has been directed toward specific deficiencies.[48] This emphasizes the tremendous importance of the teacher's continually bearing in mind the fact of individual differences as a basis of conduct. Too often, perhaps, teachers expect a similar performance from all pupils on the theory that all are similarly able to give the same performance.

Important as it is for proper pedagogy to be based upon accurate knowledge of individual differences of pupils, only a mere beginning of scientific measurement of such differences has been made. Kelley and Shen [49] have stressed the point that the present tests are largely empirical and have been made up without "comprehensive analysis of the abilities of man." To these writers, by far the most urgent

[48] Edward L. Thorndike, *Educational Psychology,* Volume III, (Teachers College, Columbia University, 1914), p. 388.

[49] Truman L. Kelley and Eugene Shen, "The Statistical Treatment of Certain Typical Problems," in *Foundations of Experimental Psychology,* Carl Murchison, editor (Clark University Press, 1929), pp. 878–881.

problem is the determination of the traits or aptitudes in which human beings should be measured. There is, of course, no formula at hand for the determination of such traits. It is a process necessarily preclusive of exact statistical measures and even more important than they are. In the discussion referred to, there are comments upon Thorndike's suggestion that individual differences should be measured from the following angles:

(1) Height or level of difficulty
(2) Number of different tasks
(3) Speed

The question arises as to whether differences in abilities in the same person do not cancel, granting that people vary in the possession of any given trait in quantity. For example, may not one's low ability in the capacity required for the successful mastering of mathematical material be offset by the fact that one is greatly gifted in ability to master history? In other words, does there exist correlation between abilities or does a compensatory principle operate which offsets deficiency in one field by marked ability in another? Emerson to the contrary, present opinion based upon the correlated results of measurements of various traits inclines to the opinion that there is correlation rather than compensation. It may well be that there are traits as yet unmeasured which stand in compensatory relationship to deficiences in other traits. As Kelley and Shen have pointed out in the work above cited, the range of traits which has been measured as yet is comparatively restricted. There is reason to suspect that in temperamental make-up and motivating drive there is compensation for sheer physical ability. There is some evidence which points this way in the matters of common observation. Even with variables fairly well controlled, the

correlations between intelligence and achievement are not perfect. This may indicate that some factor such as studied compensation together with perseverance may be operating which tends to offset disadvantages from lack of ability.

The problem for a teacher in a given subject is a specific one. It consists primarily of determining the individual differences as the class begins work. The whole basis of the most successful modern methods of teaching is a recognition of the facts of either native or acquired differences in classes. Having determined the extent of raw differences between individual pupils, teachers should acquire as much information as possible about causative factors. The boy whose low rating depends upon lack of energy, indifference, or inertia requires fundamentally different treatment than the one who has reached the limit of his innate capacity.

The Relation of Physical Condition to Conduct

Entirely apart from the fact that the sheer mechanical organization of our bodies pre-defines what may mechanically be accomplished, what may the relation between physical condition and conduct be said to be? To what extent is our behavior dependent upon physical condition? Emphasis upon physical condition as a vital factor in performance is well recognized in the field of athletics. Here precaution is taken to secure a certain stage and state of physical being on the theory that it is all important in the performance of necessary skills. Again, students frequently give as the excuse for poor performance in examination, "that I was not well during the examination." Innumerable practical situations such as these make the study of the relation of physical condition to conduct requisite.

The way in which conduct is influenced by the physical condition of the reacting organism may be considered under two heads: first, actual effects upon physical performance of varying organic conditions, and, second, the mental effects which influence conduct. These will be considered in the order mentioned.

Many investigators have worked upon the problem of the extent to which the human body possesses reserves of strength and insulation against shock. This is as important to the teacher who has charge of pupils as it is to the engineer whose construction of a bridge in faulty fashion may endanger human lives. The engineer does not make the bridge just able to bear the weight of the traffic. There is always provided, if construction is proper, a rather wide margin of safety. When the human body is studied from the same standpoint and an effort is made to determine the extent to which human beings possess resources beyond those actually needed to carry on functions at a normal level, it is found that tremendous reserve forces exist. Cannon in *The Wisdom of the Body,* has multiplied examples of the marvelous capacility and adaptability of the bodily organs.[50] His conclusions are based upon such excellently and carefully controlled experimental work as to render them worthy of the greatest confidence. These results indicate that the human organism in its behavior is not relying upon a medium of expression which is operating at all times at a maximum of efficiency but rather that the most outrageous abuses are necessary to produce a danger of breakdown. Gates has pointed out the same thing in discussing the factors which influence ef-

[50] Walter B. Cannon, *The Wisdom of the Body* (W. W. Norton & Company, 1932), Chapter XIV, "The Margin of Safety."

ficiency.[51] He cites experiments in which students were subjected to all manner of discomforts, distractions, and indignities far exceeding in rigor the ordinary vicissitudes which are frequently used as excuses for poor work in examinations and found that in spite of the various types of hardship that students by exerting an effort were still able to do mental operations at a normal level of efficiency. These findings indicate that, although it may not and usually is not advisable to do so, it is possible to subject learners to a more rigorous type of training than would on the face of their reactions seem justified and yet do no permanent damage. These results also show that malingering among students is probably more frequent than is sometimes suspected and often, in deference to a supposedly real condition of physical ill health, one has given consideration instead to an hysterical or feigned state.

In addition to the chemical and physiological factors involved as determiners of conduct in a strictly mechanical sense, there is the effect which physical condition has upon the mental processes of learning which in turn influence conduct. Schopenhauer is said to have had his point of view toward life influenced by his physical condition. This physical condition altered not only the nature of his attitudes which show themselves in his writing but also his conduct. If one is totally unable to engage in any sort of athletic pursuits, this fact alone may engender an attitude toward athletics. There is reason to believe that people are inclined toward undue praise or undue dislike for types of conduct in which physical conditions do not permit indulgence. The weakling is apt to be either extraordinarily admiring of feats

[51] Gates, *op. cit.*

of physical power or to make fun of them altogether in an attempt to show their uselessness in terms of value.

The facts on the relation of physical condition may be summarized as follows:

1. Conduct is the result of the functioning of an organism which possesses large reservoirs of strength and potential energy. Optimum periods of practice for various kinds of performance have been determined, but evidence indicated that, although greatest efficiency is in terms of optimum length of practice periods, real damage is not likely to result from mental overwork.

2. Physical condition may have an indirect though very powerful influence upon conduct because of the attitudes set up through the existence of certain physical disabilities which, preventing the child from engaging in some pursuit deemed socially admirable, create a feeling of undue approbation or inferiority and even active dislike.

General Types of Physique and Conduct

Speculation as to the relation of physique and conduct is probably as old as the history of psychology itself. In recent years well-controlled experimentation by competent investigators has somewhat served to clarify a perplexing problem. One fact that makes the study of the relation between physique and conduct of importance is the great number of pseudo-psychologists who are making pretentious claims to having discovered systems whereby, from a study of certain physical characteristics, they may advise advantageous future lines of conduct. It is impossible to review here all of the experimental evidence upon the relation between physique and

conduct. The general conclusions, however, may be summarized in five propositions.

1. Influence of mechanics. Certain types of behavior and conduct are determined by physique as a mere matter of mechanics. In occupations, for instance, requiring as a prime requisite the exertion of great bodily strength the individual who is tall, heavy, and strong is automatically at an advantage. Therefore, while all tall, heavy, and strong individuals are not forced to go into such occupations, those who are constitutionally weak are likely to avoid them.

2. Physical traits and intelligence. Present experimental findings do not warrant the conclusion that there is any close relationship existing between physical traits and intelligence. The highly optimistic conclusions of phrenology and allied arts are, of course, far afield. Even measurements based upon morphological indices have failed to show any appreciable relationship. Paterson has given an excellent summary of the evidence upon this point. He states his opinion in the following words, "Our detailed survey of available quantitative evidence has demonstrated that prevalent notions regarding the intimacy of the relationship between physical traits and intellect have been greatly exaggerated. Search in the realm of gross anatomy for a physical correlate of intellect has yielded uniformly negative results. It appears that such structural characteristics as height and weight are correlated only slightly with intelligence, narrowly defined. Even measurements of head size and shape are found to be relatively independently variable with respect to intellect, and skeletal development measured by precise X-ray photography yields either zero or low correlations with intelligence. The same may be said of dentition.

Physiological development, measured in terms of pubescence, is found to be relatively unrelated to mental development, and so are complicated morphological indices of body build.

"A more surprising finding is the negative trend of the evidence with respect to mental correlates of ordinary physical defects and certain presumably deleterious physical conditions. In addition, there is the disappointing outcome of glandular therapy as a predicted panacea for mental deficiency. The evidence seems quite clear that mental development proceeds in relative independence of physical condition except when disease processes or injuries directly attack the central nervous system, especially the higher centers." [52]

3. Physique and mental pathology. There is evidence to show that some types of mental derangement are accompanied though not necessarily caused by certain kinds of physique. The rather optimistic belief of Berman and similar investigators with reference to the ductless glands as causative factors in the determination of major types of mental derangement have not been borne out by experimental observation. Certain morphological anomalies, however, have been found to be related to various types of mental derangement. Wertheimer and Hesketh have discussed this relationship.[53]

4. Physique and school achievement. No highly significant relationship has been demonstrated between various characteristic physiques and school achievement. Adams, in investigating the relationship between physique and proficiency in school subjects says, "It is concluded then that

[52] Donald G. Paterson, *Physique and Intellect* (The Century Co., 1930), pp. 269–270.

[53] F. I. Wertheimer and Florence E. Hesketh, *The Significance of the Physical Constitution in Mental Disease* (The Williams and Wilkins Company, 1926), p. 72.

a low but probably significant relation exists between school achievement and size when this relationship is partialled for intelligence. The reason for this relationship is not understood." [54]

5. *Physique and social conduct.* In spite of the lack of demonstrated relationship between physique and mental capacity or school achievement, it is probable that gross physique has a great influence in the determination of social conduct. Many of the experiments which are the foundations of the above conclusions or propositions have been aimed at determining the relationship between physique and certain abilities of the individual. Except for some tendencies in the field of psychiatry, the lack of such relationships has been noted. If one considers the social implications, however, of differences in gross physique, results are more impressive. Although the experimentation upon this phase of the problem has not been as technical as some of the other work, the results are interesting and worthy of note. A very beautiful girl, for example, produces different reactions in men and women alike from those called into being by a very ugly girl. These reactions, in turn, influence the person who is beautiful or ugly and the future conduct of that person. The special cases and ramifications of this type of influence are unlimited. The experimental facts so far ascertained taken in conjunction with some of the findings being made as to teaching success, particularly in its relation to certain physical traits which are pleasing or displeasing to students, are suggestive. For as surely as there are short stature, long noses, blue eyes, great size, or any other of hundreds of

[54] Sidney Adams, *The Relation Between Physique and Proficiency in School Subjects* (unpublished master's thesis, University of Washington, 1929).

features which affect the behavior of other people toward us, just as surely our own conduct is bound to be affected by those reactions.

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CHAPTER III

MENTAL FUNCTIONS

The Growth of Mental Functions as a Continuous Process

The formulation and acceptance of the principle of the gradual development of mental functions has increased the difficulty of distinguishing among levels of intellectual conduct. If contemporary science permitted scholars to agree with Rousseau that youth and reason effloresce together, one might arbitrarily limit such a term as secondary level of conduct to adolescent behavior. A primary level of conduct might then be defined in turn as the impulsive behavior of children, and a tertiary level of conduct as that exhibited by adults. If contemporary practice permitted an observer to conclude that pupils enter secondary schools fully equipped with the tools of learning, one might assume that the tools would there be utilized for ends which are higher than a tool-acquiring aim of elementary schools. Pupils might thence advance to collegiate institutions for still loftier flights of research or for professional training. If contemporary theory permitted educators to restrict the term *secondary education* to highly selected pupils who are destined later to attend professional schools, one might view secondary schools as half-way institutions for supplying techniques or attitudes which are required in subsequent specialized training. Pupils might then be counseled in terms of their prospective

professions and professional courses, and curricula might be differentiated accordingly.

Partial truth resides in each of these conditions. Science finds youth equipped for situations which baffle the reasoning abilities of younger children; practice finds secondary-school pupils utilizing certain tools of learning which have already been mastered while they are acquiring additional tools; and modern theory prompts vocational, if not exclusively professional, counseling. The stratification of education by means of definitions encounters difficulties with science, practice, and theory. These difficulties are due in part to science which maintains that mental functions develop gradually through activities as complex hierarchies, in part to practice which provides for individual differences in development, and in part to theory which proclaims the need for an unbroken line of development throughout a democratic sequence of elementary and secondary training.

In accepting the law of gradual mental development, one must recognize that, in the conduct of pupils of any given age, many characteristics of childhood may occur alongside other characteristics which are ordinarily attributed to adulthood. Such uneven individual development may be due either to irregular physical development or to unusual educational conditions. Irregular physical development may, as shown in Chapter II, lead a child to react atypically, and such atypical conduct may, in turn, lead to social situations which are unlike those experienced by typical children. The educational conditions under which children develop are not adjusted so that all the possible characteristics of all children can mature evenly. Either chance or design may cause the neglect of certain conduct patterns and the accentuation of others. One youth who has been isolated may, as a result of

this chance circumstance, have only the young child's patterns of conduct in dealing with his fellows; another youth may, as the result of chance circumstances such as extensive travel and varied human associations, possess conduct patterns which are characteristic of sophisticated adults. Ordinarily, however, many patterns of conduct develop concomitantly, if not *pari passu,* "to the extent that educative means are evenly distributed with reference to the different tendencies. By special emphasis, that is, by exposure to certain educative processes, certain traits can be disproportionately developed." [1]

Examples of special neglect and of special emphasis are found in the classroom and on the playground. A dull pupil's lack of success with reading and arithmetic impelled his teachers to require all his time for these subjects. Later, upon being transferred to another school, the boy was allowed to proceed as a special case. He then devoted the major part of his time to art, at which he excelled all his classmates. This case, first of special neglect and later of special emphasis, changed the individual situation from one in which development was made very slowly in the subjects pursued to one in which a sudden advance in skill and creative activity took place after the transfer to a new school. The school authorities were probably correct in assuming that the improvement in the boy's attitude as well as his progress in art work was due rather to the changed requirements in his school than to a changed rate of mental maturation. In addition to individual cases of sudden improvement there are many cases of sudden advances by entire classes. A high-school class in American poetry was recently observed

[1] W. L. Uhl, *Principles of Secondary Education* (Silver, Burdett and Company, 1925), p. 284.

during a rapid transition from an attitude of professed distaste for all poetry to a condition in which all members of the class were seeking and reading and vigorously discussing numerous poems. Changes in the treatment accorded to junior high-school pupils by their churches, their homes, and by all other institutions or social groups in which children are influenced or controlled by adults may be cited as potent causes of sudden variations in the attitudes and conduct of pupils at the onset of adolescence.[2]

Even though these sudden variations be due largely to external causes rather than to sheer internal maturation, the obvious condition is that variations actually occur and that pupils of all ages are susceptible to them and should be treated accordingly. Since such individual variations are ascribed to an uneven distribution of educative means, the school can, as in the cases cited, make definite provisions for the cultivation of desirable changes and for the counteracting of unfortunate external conditions.

A theory was once held by certain psychologists that a fairly fixed periodicity exists in the appearance of such characteristics as interest in adventure and accounts of the supernatural, the making of collections, the ability to reason and to memorize, and so on. As human beings throughout their school years and subsequently, unless dementia occurs, exhibit all these characteristics, there seems to be no justification for allocating any of them to children of a certain age. The placing of the "age of collecting" at any one "period of development" seems, for example, to overlook the fact that children often make extensive collections before school age

[2] A diverting account of such changes and their causes is recorded in "In Transit and Return," by Janet Flanner (*Century Magazine*, C, 801–813, October, 1920).

and that adults continue to make collections of money, antiques, rare books, Japanese snuff boxes—things useless as well as things useful. The time at which the schools encourage children to make collections for pedagogical ends seems, therefore, to depend upon the appropriateness of the activity for the school situation and not upon the children's automatic maturation. Likewise, teachers of religious education can find abundant evidence for the appropriateness of an early beginning and a long continuance of their work. Here, as in the case of the cultivation of making collections, general characteristics, such as curiosity about certain problems and interest in accounts which deal with the supernatural—fanciful or seriously speculative—persist throughout the school period to beyond. The "age of drill," as data to be cited later from Thorndike show, has been greatly extended by recent observations of adolescents and adults.

Types and Characteristics of Mental Functions

Six general types of mental functions have been implied in the preceding sections: (1) problem solving; (2) acquisition of knowledge; (3) acquisition of skill; (4) social competence; (5) creative activity; and (6) æsthetic experiencing. This entire treatise, is of course, devoted to these functions. As these mental functions are found in all educative activity, they will be described in this section. Before each function is treated separately, characteristics which are common to all of them will be discussed.

All progressive conduct, *i. e.* all educative activity, consists of improved adjustment of the individual to the external world and to the conditions which exist within himself. This improved adjustment consists of the development

of modes of indirect responses to stimuli. Excepting cases in which this improved adjustment is due to chance, it is, at least in part, a product of problem solving, and, in part, a product of the acceptance of some one else's solutions of problems. In this sense all six of the mental functions just named are fundamentally processes of adjustment and, therefore, in part, problem solving. The other five are in this sense special applications or subdivisions of the first function. A relatively unanalytical or complacent pupil may be unable to state clearly the life problem which confronts him as he acquires knowledge or skill. Ordinarily, however, his training is planned so that he acquires knowledge, as in science or history, for the purpose of solving a problem or avoiding a problem by acquiring some one else's solutions and thus improving his adjustment to this world. In social life also, one may find that certain reactions yield desired results; such a discovery through problem solving often leads to further problems which involve social competence. A pupil's mathematics or music or any other subject may be used by any resourceful teacher to suggest activity that, to the pupil, is original or, in a sense, creative. A problem in creative activity may thus arise. This problem may, in turn, as in the "creation" of geometrical designs, contribute to the pupil's æsthetic experience. The relationships between problem solving and the other mental functions and also the development of attitudes and values will be described in more specific terms in the later sections of this chapter. This introductory account aims only to point out the fact that such relationships exist and that all functions often appear concurrently. The student of this subject must allow his own somewhat compartmentalized ways of thinking to spread sufficiently to enable him to see these relationships. In the characteriza-

tion of the six types of conduct, special attention will be given to problem solving, for it enters each of the other types.

1. Problem solving. In the above statement that progressive conduct consists of improved adjustment, there is an implication that an individual's earlier adjustment has been found inadequate. This inadequacy will have arisen and will have been recognized in a crisis in the individual's life. The crisis, like the resulting readjustment, may be relatively either inconsequential or momentous. The initial characteristic of problem solving is this meeting of an issue that must be faced and the recognition that a new response or pattern of conduct must be developed. The final characteristic is the discovery of a relationship that, when applied, ends the crisis.

The development of adequate drainage in a land where there was already too little moisture illustrates this function. The soil of the semi-arid Big Horn valley of Wyoming was found suitable for the production of sugar beets. The climate was also suitable, and water for irrigation was available. Consequently, arrangements for farming were made. Beets grew, transportation and factories developed, and prosperity seemed in the offing. At this stage, the crisis arose: fields that had been made fertile grew white with a deadly enemy of edible vegetation, alkali. Soil that had been productive, water, and a favorable climate were no longer productive. The earlier adjustment was no longer adequate. The problem of readjustment was faced. Conceivably, there were three possibilities: the soil might have been treated by a counter-agent; the topmost soil might have been removed or resurfaced; the paradoxical plan of draining soil which had only recently and at great expense been watered.

In analyzing this situation, as in the analysis of any prob-

lem solving situation, the first point to observe is that the problem grew out of an actual chain of life processes. The second point is that the persons who faced the problem were required to do so by the obvious exigencies of their own condition. A third point to observe is the fact that those persons were keenly interested in solving the problem. As a result of these three points, there was a vitality about the effort to solve this problem that is not always present when pupils are required to solve some one else's problem or a problem about whose outcome they are not greatly concerned.

The steps in this, as in all problem solving, are clear. These steps are seven in number: (1) the problem was found; (2) the conditions were carefully observed; (3) the problem was clearly defined; (4) suggestions or hypotheses were critically examined and tested; (6) the best, or apparently the best, hypothesis was adopted as a working principle or plan; and (7) this plan was applied, and, in the case cited, the land was provided with a drainage system which carried away the excess quantity of alkali.

Fundamentally, these steps are not unlike those followed by the geometer. When, for example, a pupil tries to find out whether or not four noncollinear points, A, B, C, D, lie in the same plane, he may have information which tells him that, if the straight line determined by two of the points and the straight line determined by the other two points pass through a common point, the four points lie in the same plane. Here, again, the seven steps are the same as those in the irrigation problem:

(1) a problem is raised;
(2) conditions are noted;
(3) the problem is clearly defined in the light of the conditions;

(4) suggestions are formulated (lines are drawn or imagined, etc.);
(5) the suggestions are examined and tested (by reference to what is already known of geometry, by direct observation of a drawing, etc.);
(6) a workable suggestion is adopted; and
(7) the suggestion is applied (by showing that, even if the second pair of points revolve to *any* position, they must still be the plane of the first pair, etc.).[3]

Problem solving is sometimes direct and almost instantaneous, and sometimes clumsy and circuitous. In the detection of clues, minimal signs may guide the problem solver surely and rapidly. So automatic may his response become that only by painstaking analysis does he recognize that these crucial signs govern his response. As examples, the practiced athlete quickly adapts himself to points of weakness or strength in his opponents and solves the problem of the game accordingly. The unpracticed batsman may exhibit fear of the pitcher's swift ball—he stands timorously, he dodges a curve which passes at a safe distance; the pitcher knows this man by these signs and, with apparent abandon, hurls the ball directly over the plate while the trembling batsman dodges. Likewise, the trained banker detects indications of the would-be swindler and the minimal expressions of the sincere. So, also, every one recognizes certain possibilities of friendship in a stranger. Insight, intuition, or instantaneous awarenesses of this kind enter into problem solving and enable the apt and skillful to shorten their paths. By the same process, the capable pupil intuits the conditions of his problem in geometry, English, or manual arts, and so on.

[3] *Cf.* J. W. A. Young, *The Teaching of Mathematics in the Elementary and the Secondary School* (Longmans, Green & Co., 1906), pp. 126–127.

By the absence of ability to see and act upon such cues, the stupid pupil brands himself as a dolt.

The detection of relationships and the weaving together of related evidence distinguish the problem solver. Items which are passed without notice by the unskillful are discovered by the skillful as related to the crisis. Throughout the seven steps, relationships are sought and acted upon while irrelevant matters are cast aside. The ability to see these relationships, and, therefore, knowledge of them are essential in and are developed by problem solving. It is recognized, of course, that the most skillful pupil transfers much of what he gains in one situation to another in such use of related or analogous material. This generalizing and applying of procedures and content transferred from one situation to another will be treated later, as will also specific applications of problem solving to other aspects of school work.

2. The acquisition of knowledge. The earlier discussion of the acquisition of knowledge in connection with problem solving has indicated that this process consists of the registering of a datum or the making of a datum more definite and indelible and meaningful. This conception of the acquisition of knowledge assumes (1) that the pupil is an active organism undergoing sense experiences—a stimulus-response situation; (2) that, besides sheer registration of sense experience, the pupil interprets, *i. e.* evaluates, this experience; (3) that the pupil shows evidence of having registered and interpreted the datum by his appropriate response to it; and (4) that, in future situations, the pupil will be guided by prior experiences.

Knowing a thing carries with itself a dynamic quality which leads to doing something about it. Knowing means, intrinsically, that future action, inner or overt or both, is to

be influenced by the very knowing. Significant, defensible subject matter is something which, when experienced or known, normally and naturally influences conduct in desirable ways.[4] An activity associated with subject matter—data of knowledge—uses that subject matter, and this use constitutes practice or drill. This is the basis for activity in schools and for "activity schools." Such schools attempt to use only such subject matter as is significant to pupils. The necessary association of subject matter with activity in such schools leads to a somewhat defensible, pragmatic conclusion that the curriculum includes both subject matter and activity. A more defensible conclusion may be, of course, that the curriculum includes only the subject matter.[5]

The implications of the dynamic power of knowledge can be illustrated by simple examples. Knowing (1) that fire burns, affects action of an overt variety; (2) that mice play when cats are away, affects regulations about cats; (3) that *vescor* takes the ablative, affects both translation and composition in first-year Latin; (4) that a constituent wants to sell wheat, affects a congressman's action on the tariff, and so on. That is, knowing leads to a consideration of what to do about a datum. Next, this consideration leads to an hypothesis which, in turn, may be found good. Finally, a principle for future action is accepted, and the person who accepts it is said to have an attitude.

This process is often shortened. The "datum" may not be a proper object about which to act, for some one else may already have passed through the process and found an hypothesis which forbids further inquiry. In such a case the

[4] John Dewey, *Essays in Experimental Logic* (University of Chicago Press, 1916), pp. 390–442.

[5] See Chapter VIII.

principle which some one else has determined upon may be imposed—self imposed or not. As consensus agrees that fire burns, this principle or function of fire is imposed upon children before injury is possible. As mice play—and destroy —cats are allowed to intervene, and they do not give us a chance to make the direct observation and arrive independently at a principle. As *vescor* does take the ablative, pupils are not allowed to experiment with having it take the accusative. As the farmer wants money for his wheat, the congressman does not risk having him keep the wheat only to let it decay. Occasionally, however, some one does venture to see for himself, and sometimes he finds a new principle. Then, he proceeds upon it—if allowed to do so.

The only reason why any one discovers anything for himself is that he faces a crisis in an existing order. The only reason why any one else objects is that the existing order is acceptable to this other person—he has accepted conventional knowledge as his determinant of action. If a change were made, he would have to go through a reorganizing process. Therefore, he wants the *status quo*. He will not take the chance of allowing fire to burn, mice to play, *vescor* to take the accusative, or farmers' wheat to decay. Why? No crisis has arisen for him. If a fresh start could be taken, he might find that it is better for fire to burn—a little, for mice to play—with poison, for *vescor* to take the accusative—the form of our objective case, and for farmers' wheat to decay—and for them to raise other products. One person may, therefore, have an inquiring attitude, and another an accepting attitude. Why? Because of crises or a lack of them. The attitude is a direct result of what has happened—crisis and experimentation in one; no crisis and acceptance in the other.

Although knowledge can often be more effectively acquired

by relevant, systematic use in connection with a problem, it can also be acquired by rote or directed reception through the sense departments. Both rote or verbatim learning and learning by use are important. Indeed, they are normally found in combination in the mastery of a single unit of material. An example of affective rote learning is that in which a pupil masters a foreign language vocabulary largely by drilling himself upon the words which he needs for the reading of a given text. It appears that such learning may be more effective than an attempt to learn the same words by simply reading the text.[6] Although the learning of a limited vocabulary by rote has been found more effective than learning by context, one can not conclude that there should be no contextual drill. This indicates only that, in the learning of a comparatively small number of items, the rote method is the faster and, as shown by retests, the more lasting. The explanation seems to be that learning by rote consists, in this instance, of simple S-R situations, while contextual learning consists of more complex S-R situations.

An example of effective learning by use is that of an eleventh-grade pupil who discovered, while reading a group of novels by H. G. Wells, that these novels fell into two very different groups. In one group were novels which were simply "good stories," in the other group were propagandistic novels. This pupil then arranged the novels in the order of the dates of their publication, and proceeded to examine each of the author's other novels to find out whether or not her

[6] Louise C. Seibert, *A Series of Experiments on the Learning of French Vocabulary* (Johns Hopkins University Press, Studies in Education, No. 18, 1932). See also Stevenson Smith and F. F. Powers, "The Relative Value of Vocabulary and Sentence Practice for Language Learning," *Journal of Social Psychology,* Volume I, Number 4, November, 1930; and H. R. Huse, *The Psychology of Foreign Language Study* (University of North Carolina Press, 1931).

hypothesis about Mr. Wells' novels was correct. She could, of course, have learned a single point about the novelist in an easier way, had she been told by an instructor that the works of many individual authors, including Wells, fall into sharply defined groups. In her case, however, this was only one of many items of knowledge which she acquired. The fact that she read half a dozen novels voluntarily was only one of the effects of the method of learning by use. She had already read two other novels and discussed them critically with her teacher in this "unit" of her work. Her complete record consisted, therefore, of many vicarious experiences, much definite information, and much relatively unsystematized information from her reading of eight novels in one month. It may be asserted, though, of course, without proof, that her learning of the one datum about Wells' novels would have been less meaningful if it had been learned by rote. This instance illustrates, at any rate, the four points catalogued at the outset of this discussion of the acquisition of knowledge.

From these examples, two additional problems can be raised. First, can zeal engendered by a problem make subsequent rote learning more effective? If a pupil is aroused by the reading of two of Maupassant's stories in French, so that he wishes to read an additional story by the same author, could he then learn more effectively by rote a list of twenty-five new words which occur in the third story than if he had not been aroused? If so, the vital problem of unlocking another story is important in affecting the pupil's attitude. Second, can the relative values of rote learning and learning by use be measured? Obviously, the simple effects of rote learning and the formal items of learning by use can be measured by simple devices. The more involved effects of learning by

use—the amounts and values of vicarious experiences and of unsystematized experiences—while conceivably measurable, are seldom, if ever, exactly measured. The reason for this is probably that no one has devised a measure which will show the full effects of so complex an activity as the solution of a gripping problem. To do so, one would need to measure such elusive matters as the effects of fantasy. Here lies a task for future specialists who may be able to measure everything that exists! To the first of these problems, however, psychologists have a definite answer. Motivation of the learner, confidence in the outcome, persistence, and willingness to accept the outcomes of learning, as will be shown by data and discussion in the succeeding chapter, enhance the acquisition of knowledge. The relation of these and other issues to methods of teaching and learning will be elaborated in Parts III and IV.

In addition to the systematic acquisition of knowledge, there is a continuous process of relatively undirected, unsystematic registering of data. As one glances here and there on a familiar highway, or cursorily leafs through the pages of a magazine, or casually talks with another person, many important items of knowledge are obtained. So important are these impressions that a child who has a great variety of them is said to have a "rich background of experience." Such a child is able to achieve a higher score upon a general intelligence test than a child whose experiences have been more restricted. Likewise, a pupil is described as alert if he receives many impressions from a given amount of exposure to the external world, while a pupil is stupid if he fails to record such impressions. Intelligence tests measure also this difference in the acquisition of knowledge. Such alertness in the presence of a variety of stimuli presents a situation not

unlike that of the pupil whose extensive reading of novels has been mentioned. This value of rich experience is the principal support of recent tendencies to increase the activity of pupils and to cultivate their extensive reading, experimentation, and research in secondary schools.

The permanence of learning depends upon the learner—his sheer ability to retain what has once been registered and his subsequent use or recall of what has been acquired. While forgetting is usually marked for a short period, a day or two, there may be relatively little forgetting during subsequent days or, in some instances, during many months. In the learning of French words cited above, for example, there was a sharp decline in the scores for rote learning during the first two days, an improvement during the next eight days—owing possibly to the recall on the second day, and a gradual decline during the next thirty days. For the contextual method, however, there was at first no sharp decline, although the decline from the tenth to the fortieth day paralleled that for the rote method. The value of recall has been measured in many cases of learning. These investigations indicate that systematic periods of recall render more indelible the knowledge already acquired and lead, therefore, to the designation of the use of recall as the *saving* method. The amount of incidental use of recall by different individuals has not been measured, but recall probably occurs in large quantity in certain persons who, without systematically driving themselves, look backward to their previous experiences.[7]

3. The acquisition of skill. The acquisition of skill con-

[7] *Cf.* M. E. Herriott, *Attitudes as Factors of College Success* (University of Illinois, Bureau of Educational Research, *Bulletin* No. 47, 1929). Also L. W. Webb, "Students' Methods of Studying a Certain Subject—Psychology," *Journal of Educational Psychology,* XI, 193–206 (April, 1920).

sists of the conditioning of a responding organism to perform an act effectively. The skill may be chiefly either "mental" or motor. The four assumptions stated in the preceding discussion of the acquisition of knowledge are held with reference to the acquisition of skill. Likewise, the ways of acquiring knowledge apply to the acquiring of skill: skill can be acquired by rote or formal drills, by unsystematic practice, and by systematic use in the facing of problematic situations which require new or improved responses. No sharp line separates skill from problem solving ability in general.

Certain skills require much drill or practice for perfection or for adequate adaptation, while other skills or ways of responding require only a single performance or a few repetitions. The amount of practice required for a given skill depends, of course, upon the nature of the stimulus, the response, the responding organism, and the situation or situations in which the skill is to be used. If the stimulus is a hot stove touched by a very young child, a single performance will adapt the child to remain at a safe distance from hot stoves and lay a foundation for other more complex reactions. If the stimulus grows out of an adult's desire to pronounce a difficult word in an unfamiliar foreign language, many repetitions may be necessary. In this case, however, the adult may quickly find a cue to this skill and acquire it in a trice. The pronunciation of the twenty-seventh letter in the Russian alphabet, may, for example, present grave difficulties, especially as it occurs in words, if one who is unfamiliar with phonetic signs is told only that the proper sound is *šča*. The letter itself seems difficult and a word containing it, as *proščaete* (good-bye) seems very difficult. With the cue, however, that this letter has simply the sound of *sh* and *ch*

in fi*sh* *ch*owder, the letter is easily pronounced, and the word becomes at once *prosh-cha-et-e*. In spite of this simplification, the beginning student who is confronted with the word in Russian letters will have to repeat it and other words containing this letter many times before he can render them "like a native." In the hot-stove–child situation, the four conditions —the stimulus, the response, the responding organism, and the situation in which the skill is to be used—involve only a slight adaptation of what had already been acquired. The situation is, therefore, simple, and acquisition of the skill of refraining from the contact is easy. This situation is also definitely impressive and mastery is complete. In the foreign language situation, each of these four conditions involves a major adaptation of what had already been acquired, and that situation is, therefore, complex and the acquisition of this skill is difficult. Furthermore, errors in attempted adaptation lack impressiveness and definiteness. Hence, systematic, progressive attempts or repetitions are necessary, according to the degree of mastery desired or required. If perfection is required in giving the sound of this letter, its use may be practiced in many combinations to improve facility, and frequent appraisals of progress may be made by a tutor. The formula for the process then becomes, stimulus—response—responding organism—general situation.

A variant in the acquisition of skill may occur if the stimulus consists of two or more parts. If, for example, a sadist should insist upon bringing the child dangerously near to a hot stove, the child would acquire a fear not only of hot stoves but also of this person who aids in the child's discomfiture. Conversely, a person who protected the child from such experiences would be regarded as a friend. When such responses are made to accompaniments of the fundamental

stimulus, the child is conditioned by both the stimulus and its accompaniments. Skill in facing ensuing situations often involves the reconditioning of a learner. Accompaniments of the real cause of a fear are sometimes in no wise responsible for the unpleasantness. Reconditioning consists of showing the child that desirable experiences may come from these accompaniments. The unskillful batsman described above required both practice and desirable experiences to enable himself to acquire a skillful response in his situation. Further practice with a fear-engendering pitcher will increase his fear; that is, it will reduce his skill. The pedagogical significance of such conditioning of responses, though obvious, is great.

Specific, formal drill has demonstrable values. In music, for example, practicing of études based upon frequently recurring musical patterns have enabled gifted students of Czerny, Philipp, Busoni, and others to attain impeccable virtuosity. Willing, in his investigation of English composition, found that composition skills are likewise specific and that specific drill activities are the most effective.[8] Touton found a similar situation in the skill required to solve geometric originals.[9] Many additional instances of this kind are available in educational periodicals and monographs. As in the pronunciation of foreign words specific practice with many repetitions and finally in connection with the whole process is necessary in other technical development when major adaptations of what has already been acquired must

[8] M. H. Willing, *Valid Diagnosis in High School Composition* (Teachers College, Columbia University, Contributions to Education, No. 230, 1926), p. 50.

[9] F. C. Touton, *Solving Geometric Originals* (Teachers College, Columbia University, Contributions to Education, No. 146, 1924), Chapter V.

be made. When unsystematic or even well-organized drill is conducted, progress is slow or uneven.

The finding of a cue for a given response, as in the cue to the pronunciation of the Russian letter, is sometimes so prompt and direct that it has been traced to a gift known as insight or intuition.[10] According to that view a pattern of conduct or *Gestalt* may spring in full bloom as a direct reaction to a given situation. The fact that Köhler's apes made certain correct responses may have been due, however, either to accident or to minimal signs which serve as cues. Children, when confronted with a problem of adjustment, sometimes make a direct response of the intuitive variety. Sixty-eight per cent of the responsive children whom Alpert investigated did so, while the remainder hesitated, talked about the problem or, apparently, about something else. She found many children, however, who were so baffled that they become sullen or indifferent about it.[11] It appears from her data that these children responded according to their keenness in observing and using the conditions or minimal signs of the situation. If so, and if this is generally the case, one may say that in the acquisition of skill as in any other problem solving, the learner makes the best possible use of what he observes, and that each learning situation should be organized with reference to the learner's likelihood of being able to obtain his cues to successful performance. To rely vaguely upon the chance of pupil insight or intuition is to invite discouragement and wrong response in half the cases—49 per cent in Alpert's investigation.

[10] *Cf.* Wolfgang Köhler, *Gestalt Psychology* (Horace Liveright, 1929), Chapter X.

[11] Augusta Alpert, *The Solving of Problem Situations by Preschool Children* (Teachers College, Columbia University, Contributions to Education, No. 323, 1928).

Further applications to the skills required in music, mathematics, science, athletics, and other subjects will be made in Parts III and IV. For the present discussion, it is necessary to add that rich experiences have the same relationship to the acquisition of skill as in the acquisition of knowledge, and that the alert pupil not only acquires much skill by incidental practice but that he also prepares himself by varied activities to find cues to relatively new situations. The permanence of skills is probably like that of knowledge. In the case of many skills, however, practice has been so extended that much over-learning has taken place, and, therefore, loss through disuse is slow. The same is, of course, true of the retention of knowledge when over-learning is extensively practiced.

4. Social competence. Social competence is the ability to react intelligently to external social stimulation and to stimulate others so to react to oneself. Genetically, the child begins his development of social competence by observing that his own conduct, when adapted to his needs, produces desirable conduct in others. Gradually, the ability to direct his conduct increases, and he becomes skillful in obtaining from his attendants the objects of his desires. He finds that certain cries are more effective than others, and, by such interpretations of his world, attunes his vocal organs and other effective parts of his body accordingly. He learns also to interpret the responses made by others to himself, and thus begins a series of social interactions with other persons. Social competence combines, therefore, the three functions already discussed in this chapter: problem solving, the acquisition of knowledge, and the acquisition of skill.

Growth in social competence depends in part upon one's physical and physiological conditions. The adolescent who has

been annoyed by a defective physical organism will have received, in many cases, indulgent attention from his family and intimate friends. As a result of this indulgence, he may have developed less social competence than his more robust fellows. He expects, and may even receive, similar indulgence from others. He may avoid persons whom he regards as unkind because of their lack of indulgence. Such a person dwarfs himself, and society aids him in cultivating this dwarfing egoism. Not all physically handicapped children either expect or receive these socially handicapping responses, and so they develop into normal social individuals. Owing, however, to their physical infirmities and to society's social incompetence, their growth requires more courage and intelligence than that of the physically fit.

Physiological development also affects social competence. The adolescent boy, whose lack of vocal control leads to the amusement of his fellows, ends the undesired comedy by ceasing many of his normal social responses. The overgrown boy tends to become too retiring, while the undersized seeks the center of the stage. In each case, however, social intelligence of the boy and of those with whom he associates may either disregard these difficulties or direct social life in a positive manner. These cases are cited to show that both society and the individual affect growth in social competence.

Intelligent coöperation of society and the individual produces social competence in the normal child. Such coöperation teaches the child that an excess of altruism or egoism, of timidity or forwardness, of docility or domineering, of meekness or rage, or of any other extremes brings reactions which most individuals wish to avoid. If persisted in, however, these excesses often produce compensatory reactions, which, in certain persons, seem to be desired and cultivated

by both society and the individuals themselves. Such persons may have the gracious manners of a Casanova or the engaging pen of an Oscar Wilde. Society may reward such gifted extremists. Less fortunate extremists are numbered among the dull and fail in social competence and the rewards it offers. The course of the extremist is hazardous. The socially intelligent pupil considers the hazards of excesses, and coöperates with society to cultivate a balancing of his tendencies and powers. This "balance" of each socially competent person is unlike that of every other. It is dependent upon one's own self. Every person has his own combination of variables: glandular secretions, reaction time, shrewdness, physique, sex, environment—which is, in part, one's own creation, and so on. The difficulty of attaining balance varies, therefore, with each person, and the complexity of the intelligent coöperation of society and the individual is obvious. There is probably a "normal" distribution of balance, as there is of its components.

The socially competent person has acquired his competence by practicing mutuality. He has found that, by overriding others, he tends toward ostracism and at least mild criminality for himself. He has observed that, if he gives too much attention to the domineering of others, he can become, at best, a sophisticated bully. He has recognized in others as well as in himself the presence of a sufficient reason, if not a good one, for all conduct and attempts either to adjust himself or to change the other person in socially or individually desired ways. By attending to socially significant reactions, he has discovered that he can react more effectively than otherwise to social stimuli and, in turn, stimulate his fellows more effectively so to react to himself. In short, he has attained a socially desirable personality. A discussion of the patterns

of such social adjustments, including the development of conventional social conduct, will be postponed until Chapter VI.

Attempts have been made for thousands of years to classify human beings into conduct types according to their physical characteristics. The relation of types of physique to conduct as shown by recent investigations, has already been presented in Chapter II. The foregoing discussion in the present chapter has indicated that there are many variables which, in combination, produce one's personality. One's early playmates may increase one's sensitiveness. An interplay of forces acting with a sensitive organism may develop the characteristic conduct portrayed in *The Locomotive God*.[12] The possible effects of a different "social climate" can be conceived of as very different from those which were actually produced. Other autobiographical accounts, as James Joyce's *A Portrait of an Artist as a Young Man*[13] and Ludwig Lewisohn's *Upstream*[14] contain many additional instances which show only what occurred when no one understood and directed intelligently the development of social competence. Granting that the authors of these books are now representatives of a certain conduct type, or that they were especially fitted by their physical equipments to develop their present characteristics, one may question an assumption that they could not now be otherwise. These men possess unusual sensitivities which might, conceivably, have led to almost totally different forms of conditioning. High orders of conditioning might have developed pyknik characteristics, as assertiveness, carefree geniality, or calm soft-heartedness which

[12] William Ellery Leonard, *The Locomotive God* (The Century Co., 1927).

[13] James Joyce, *A Portrait of an Artist as a Young Man* (B. W. Huebsch, 1925).

[14] Ludwig Lewisohn, *Upstream* (Boni and Liveright, 1922).

none of them appears to possess. Society has encouraged instead seriousness, extreme sensitiveness, and sophisticated firmness of asthenic type.

What might be done is at least suggested by Murphy and Murphy's critical reviews of experimental studies of social conduct.[15] These critical comments suggest an agreement with the earlier statement in this section about the complex interplay of many variables, which result in an endless chain of internal and external forces, and which, in turn, develop a relatively consistent entity known as personality. Basov summarizes this development as (1) a gradual biological unfolding of established tendencies; (2) a consequent development of tendencies acquired in individual life processes; and (3) an increasing reciprocal action of these and other tendencies with the development of the individual.[16] There is evidence that the adolescent who is decidedly of a given type, as the pyknik type, has been conditioned unduly in the directions of his early established tendencies, and that he is, therefore, a product of a faulty, or at least unbalanced, education. This point is supported by the fact that marked introversion or extroversion decreases with advancing years of training.[17]

Further support of this point is found in recent experiments and observations of two very different forms of social life which have been reported by Russian investigators. They find that children who have lived in the old type of social organization exhibit significantly different conduct from that

[15] Gardner Murphy and Lois B. Murphy, *Experimental Social Psychology,* (Harper and Brothers, 1931). See index under Consistency and Types.

[16] M. R. Basov, *General Foundations of Pedology,* in Russian (Moscow, 1928), p. 292.

[17] *Ibid.,* p. 301, and Murphy and Murphy, *op. cit.,* p. 363.

of children who live in a communal household and attend communistic schools. The play of children of the old order reflects that form of organization with its relatively unsocial activities, while the play of children of the new order reflects the new organization with its coöperative activities.[18] Although, as Basov points out,[19] many of the conditions which have existed for centuries leave a social imprint which can not be effaced at once, Soviet schools are attempting, in the shortest possible time, to avoid the misdirection of the past and to direct the social life of the present generation of children intelligently. This guidance of social life is in the direction of desired forms of social competence rather than the established tendencies of individual children, although these tendencies are, of course, considered in the training of each child.[20]

As social competence is a relative matter, the choice of social experiences which engender it will vary according to the attitudes of the educator. If he seeks to indoctrinate his pupils with a certain social order, experiences conducive to such indoctrination must be selected. If he seeks to cultivate independence, experiences conducive to the cultivation of independence will be provided, and so on. In any case, a rich variety of social experiences will be required to furnish training in the skill and knowledge demanded by the complex problem solving of one who is socially competent.

One additional characteristic of social competence must be

[18] *Ibid.*, pp. 285–291.

[19] *Op. cit.*, pp. 390ff.

[20] *Cf.* B. Akopyan "On Forms and Methods of the Training of the Masses During the Epoch of Socialistic Reconstruction," in Russian, *Communistic Education,* Vol. I, No. 5, March 5, 1931, pp. 7–17 and No. 6, March 20, 1931, pp. 19–30. See also A. P. Pinkevitch, *The New Education in the Soviet Republic* (The John Day Company, 1929), pp. 86–87.

treated here. In one's contact with other persons, one is said to enter into the experiences of those persons. This process, known as empathy, takes a variety of forms. If, as examples, one watches the surging, pushing, resisting, and dashing of football players, there is in oneself a minimal replica of the entire process; if one witnesses a harrowing theatrical production, as Barrymore in Galsworthy's *Justice,* there is physiological, as well as what is usually called mental, torment. Similar experiences accompany the witnessing of various forms of expressions of other persons, as listening to interpretative readings, watching a skillful artisan, looking at a great painting or sculpture, following a conversation with a friend, listening to a radio program, and many others. The person whose sheltered existence denies him these experiences loses opportunities to extend his social life. By a breadth of such experiences, one may discover how persons outside a given group react, although empathic interpretations may not always be correct. How much should be provided for each child in each possible direction can not be determined with exactness. His social competence will depend, however, upon the quality of interaction which plays back and forth between himself and the external world. The quality of this interaction is dependent upon his own physical and critical reactions and upon the suitability of that portion of the external world for producing desirable stimulations.

5. Creative activity. Creative activity is an expressive process of reconciling or balancing internal and external conditions. This balancing process is impelled by a powerful drive to respond to an emotional state. Such a process was that of Wordsworth, who, when standing on Westminster Bridge, looked upon the city and saw it wearing, like a garment, the beauty of the morning; ships, towers, domes, thea-

tres, and temples lying open to the fields and to the sky—all bright and glittering in the smokeless air. While musing thus, the poet's own powerful emotional reënforcement lead to creative expression in the sonnet to Westminster Bridge.[21] Furthermore, he entered empathically into the objective situation and perceived much that ordinary persons do not see and much that he himself had not seen before. Certain musical compositions, known as "programme" or representative music, are probably examples of the expression of analogous experiences. In Schumann's *Forest Scenes,* as in Wordsworth's sonnet, a real or imagined experience of the composer lead him to record a musical interpretation of impressive scenes, as the entrance to the forest, solitary flowers, and so on. The *Impressions of London* by Grovlez —*Westminster Abbey, The Park,* and *Sunday Evening at the Thames Embankment*—are additional records of such experiences.

Creative activity of this sort is different from problem solving in purpose, character, and outcome. Instead of problem solving in the general sense, there is here a balancing of forces, internal and external, reached only through the artist's unique, creative use of media of expression. An artist may face a problem in finding an appropriate expression of his emotional condition. In creative activity, as in problem solving, a situation demanding activity must first arise; but, in the one, desired expression of empathic attitude gives the urge, while, in the other, desired adjustment of unemotionalized data impels. The stimulus of such creative activity is the inner side of the shield of which the outer may be the stimulus of problem solving. In the one, the incep-

[21] Louis P. de Vries, *The Nature of Poetic Literature* (University of Washington Press, 1930), pp. 73ff.

tion of the problem is incidental to emotional expression; in the other, the inception of the problem is a primary, dominant condition. Wordsworth's condition was, at first, emotional and personal; his urge for expression impelled him to seek suitable media for his musings. When, however, Pasteur sought the causes of fermentation, he was impelled primarily by the lack of balance among conditions wholly external to himself. Emotional urge and a desire for the unique expression of his own affective state were secondary. He sought not to express his feelings or to enhance his emotional status; instead, he sought to face external conditions more coldly and keenly than others had. As the outcome of his quest, he sought a result which could be applied generally in carefully controlled situations, and not a result which could only express his unique experience and be applied only to situations in which an affective or emotional state was sought or was to be enhanced. In general, therefore, problem solving activity, though impelled partially by emotional urge, deals with external verities and yields an objective solution which can be generally and objectively applied with exactness to such external verities; while creative activity deals with external verities only as they affect or produce internal, emotional verities, and it yields a unique, personal form of expression, only empathically and subjectively applicable to such internal, emotional verities as may exist in the artist or in other persons. Both problem solving activity and creative activity may demand originality, but the function of originality is different in the two processes, and the product is qualitatively different in both purpose and applicability.

The balance achieved by creative activity is inherently one's own. No two persons, working independently, will express their reactions to the onward movement of Time as did

Lorado Taft or to "gardens in the rain" as did Debussy; and for two reasons: (1) no two persons are exactly alike; and (2) there are so many forms in which media of expression can be used that no two persons will produce identical complex records. Indeed, the same person would be unlikely to produce two identical, creative records, even if he were able to banish his first experience and record entirely from his memory. In developing this personally satisfying balance, the "normal" creative person deftly seeks and produces unity, vividness, coherence, consistency, and, in the case of certain constructional achievements, utility. The "abnormal" person, however, is likely to produce many of these results, but he too often goes too far, and, dominated, perhaps, by a fixed idea, he yields a wholly inutile if not incoherent record of achievement.[22] The creative seer or *novelist,* as Stendhal,[23] may so far outstrip his contemporaries that few, if any, outside his coterie of like-minded, "advanced" companions can share even the record of his experiences. Creative persons ordinarily stop short of excesses in deference to their own gregarious tendencies and the rewards showered by a responsive world. Commercial art, when creative, is an extreme example of the creative worker's concern about his public, although the adulations of admirers are not unheeded by all who follow art for art's sake. While one may act creatively in one's own way, the groping world may never be the same after the record of such activity portrays a balance all men theretofore had overlooked. Many men can re-create

[22] *Cf.* Morris Davidson, *Understanding Modern Art* (Coward-McCann, 1931), pp. 219–230.

[23] Marie-Henri Beyle, *The Charterhouse of Parma* (Boni and Liveright, 1925), prefatory note by Honoré De Balzac. *Cf.* also George Sylvester Viereck, *My Flesh and Blood* (Horace Liveright, 1931), "Seated by the roadside, I shall wait for America to catch up." P. 2.

through such a record, which only one could pattern. This re-creating is an aspect of æsthetic experience which is to be described later. It suffices for the present to emphasize the availability for other persons of the creative worker's own unique record.

Many artists to the contrary, there is little mystery about creative activity. There is, however, a plethora of mysterious accounts of how creative acts take place; but only the lack of adequate psychological analyses leaves room for this mystery. All novel emotional responses are, in part, creative. They consist of adaptations of reactions to stimuli from within and without. These stimuli arouse relevant activity, as inner play, reverie, and fantasy. At times and with certain persons, this activity is unsystematic day dreaming; at other times it is systematic and a goal is attained somewhat as in problem solving. The chief difference between such systematic activity and problem solving seems to be that this activity is more greatly affected, as to its direction, by changing emotional conditions than is problem solving in general. Like problem solving, it is often continued intermittently for long periods of time. In such cases the goal or balance may then appear like a flash, as the solution may likewise appear in problem solving. The goal of creative activity is unforeseen during much of the antecedent activity, because it must change as the mood changes, while the goal of the problem solver is fixed by the statement of his problem. The problem solver discovers the previously existing law of relationship among the factors of his problem; the creative person evolves and then recognizes the "law," or in this case, the appropriate expression, of relationships, theretofore nonexistent, among factors—moods, standards of expression,

and media of expression—that move onward together.[24] The result is the creative product. "The difference between the responses of the great poet and those of ordinary mortals . . . is a quantitative one; the great poet betrays a greater vitality, his response-mechanism is more efficient." [25] One person is creative in one department of life, another is creative in a different department. There are, perhaps, creative persons in philosophy and politics, as there are in music and drama. That is, in each of these departments of life there are persons who make novel, effective responses which yield an emotional balance between internal and external conditions.

The data of creative activity—moods, unique experiences, standards of expression, and media of expression—were named above. Moods are affective states which arise and operate according to the totality of experience and present conditions. Their sources include not only the effects of the operation of all mental functions treated in this chapter, but also the effects of proprioceptive stimuli. Moods and the unique experience operate, as stated above, through adaptations of reactions to all past and present associative processes. This operation of moods is progressive in individuals who are developing, and the reactions range from unlearned responses in infants to the studied emotional responses of the artist. In psychological terms, moods operate in creative activity as survivals of emotional reaction patterns and produce an emergent, according to the uniqueness of one's experi-

[24] *Cf.* Harold Rugg, *Culture and Education in America* (Harcourt, Brace and Company, 1931), Chapter XIX. For experimental studies of creative activity, see Murphy and Murphy, *op. cit.*, pp. 227ff. and 413ff. See also Eduard C. Lindeman, "The Conditions of Creative Thought," in *Progressive Education,* Vol. VIII, No. 2, February, 1931, pp. 112–115.

[25] De Vries, *op. cit.*, p. 68.

ence and according to whatever standards of expression one happens to observe and through whatever media of expression one happens to command.

As the achievement of creative activity varies according to one's standards of expression, any influences which affect standards are also important in this activity. Standards can be divided roughly into two divisions: those conventional standards which are imposed by society, and those which are largely self-developed and which are in terms of the purpose of the creative worker. If the attention of a relatively untrained public is sought by the creative worker, he must, of course, adapt his creation to society's standards. If he conceives new or original standards, he must wait for society to change its standards. Clear examples of both of these situations are numerous in all forms of creative work. In music, there have been the Gregorian standards of mediæval Europe, the classical standards of eighteenth century, the standards of the romantic era of the nineteenth century, the "modernistic" standard of to-day, and many others, each with variations, according to the genius of the composer. Composers, as Schumann of the romantic period and Toch of to-day, have so far departed from previously accepted standards that their works, falling upon untrained society, have been either temporarily rejected or received questioningly by an inner circle of more or less open-minded musicians. Schumann's departure from standards was so radical that only the devoted efforts of Clara Vieck Schumann, his wife, seem to have been able to train society at first to receive his works—that is, her re-creative genius as a pianist was necessary as an intermediate, interpretative artist to command society's attention until the new standards of ex-

pression could become generally intelligible. Toch is now interpreting his own works to small groups of musicians in Europe and America. After a long period of slow conditioning, society accepted Schumann's standards; fifty years hence, the same may be written of Toch. Since few musicians have either the originality of a successful innovator or the willingness to wait for society's laggard acceptance of new standards, only the composer whose abandon has been combined with unusual drive and extreme hardihood has successfully adopted highly individualistic, unusual standards. When such a composer has possessed extraordinary genius, his works have insinuated their way into the public and his new standards have been generally adopted. Not only are such composers called great, however, but also the composers, as Haydn and Mozart, whose genius has enabled them to express their moods and unique experiences through relatively slight adaptations of accepted standards. Accepted standards as well as original standards are, therefore, important for the artist. Few, indeed, of the composers whose innovations have been significant have omitted a severe training in accepted standards. The reader can supply additional instances of acceptance of standards or the development of new ones in other forms of expression.

The origin of one's own standards of creation may be traced in part to one's early and unique creative experiences and in part to the intensity and drive of one's moods. As the creative response is the result of an attempt to achieve emotional balance, one may either fail or succeed in this attempt; or one may, like many of Alpert's children in a problem-solving situation,[26] become depressed, troubled, and sullen.

[26] P. 93, above.

Under such circumstances one is driven to extremities. If conventional reactions are inadequate, others must be found or failure accepted. During this temporary blocking of emotional reactions, the ingenious creative person finds out a way. Examples of new patterns of response, as in Russian children, illustrate in a simple way the origin of new standards of creation. The new modes of living in Russia are now impelling them to develop new forms of expression of their play impulses.[27] Contemporary Russian art, drama, music, architecture, and city planning are also evidences of the development of new standards. Other examples can be drawn from the biography of childhood. Sensitive, precocious, vital, impulsive, unadjusted—or even erratic—individuals, as Schumann, Goethe, Lessing, Rousseau, and Voltaire begin early in life to exhibit variant, individualistic responses in their play and other fabrications. Goethe, for example, at the age of seven, fashioned in wax his responses to his impressions of historical facts and natural phenomena and showed unusual skill in the interpretation of his standards of expression to his father: ". . . for of all my models the ones to be especially admired are: the crocodile shedding false tears, the monstrous war elephant of the ancients, the lizard, the friend of man, the croaking frog announcing spring, all of which lack nothing but life. . . . Is not every man the best interpreter of his own works?" [28] The intensity of the clashing of standards

[27] *Cf.* O. Doroschenko, "Der Einfluss des mileus auf den Inhalt und den Aufbaer frei entstehender Kollective im vorschulpflichtigen Alter," *Zeitschrift für Angewandte Psychologie,* XXX (1928), 150–167. This investigation is reviewed in Murphy and Murphy, *op. cit.,* pp. 286–289.

[28] Albert Bielschowsky, *The Life of Goethe* (G. P. Putnam's Sons, 1905–8), p. 32. This passage is a record, said to have been written at this age by the precocious child. At the same age Goethe was writing in five different languages. See G. H. Lewes, *The Life and Works of Goethe* (Everyman's Library, p. 16).

during a readjustment as well as the precocity of Goethe is also revealed in his fairly trustworthy later writings. As a child, after reading a single play by Shakespeare he says:

"I stood like one born blind, on whom a miraculous hand bestows sight in a moment. I saw, I felt, in the most vivid manner, that my existence was infinitely expanded, everything was now unknown to me, and the unwonted light pained my eyes. By little and little I learned to see, and, thanks to my receptive genius, I continue vividly to feel what I have won. I did not hesitate for a moment about renouncing the classical drama. The unity of place seemed to me irksome as a prison, the unities of action and of time burthensome fetters to our imagination; I sprang into the open air, and felt for the first time that I had hands and feet." [29]

This passage shows also Goethe's breaking away from classical standards and his emotional urge to creation according to newly discovered standards.

The possibilities of media of expression are as countless as the sands of the seashore, but they are also limited by laws as immutable as those of the Medes and Persians. The student of harmony in color knows of the possible permutations within the numerous shades of the four primary colors; he knows also the laws affecting the possible juxtaposition of different colors—the blending of certain colors and the clashing of others. Apart from any arbitrary standards which either he or society may accept, he knows, for example, that the contiguous area in a color scheme affects each color within that area; a bright or deeply saturated color appears brighter within an area darker than itself, and conversely. The student of music recognizes possibilities and limitations of musical composition. He knows not only that certain instruments have fixed boundaries in both pitch and timbre, but also that when sounding simultaneously, adjacent steps on the scale

[29] G. H. Lewes, *op. cit.*, p. 94.

produce a vibratory jarring and that others, owing to fixed vibratory conditions, blend more completely. The student of literary creative activity has analogous knowledge of his media. If, as an extreme example, he seeks the euphuistic style of the fantastically antithetical and alliterative sixteenth century Lyly, he finds great difficulty in couching his ideas in such language as the following: "Father and friend, . . . I am neither so suspicious to mistrust your good will, nor so sottish to mislike your good counsel. . . . I mean not to cavil with you as one loving sophistry; neither to control you, as one having superiority . . ." and so on.[30] Such passages indicate also the difficulties of the translator who would preserve the play upon words through the medium of his own vernacular, and they illustrate, therefore, the effect of a given verbal medium upon literary creation. In addition to these intrinsic possibilities of the media themselves, which exist in any mode of creative expression, there are also the possibilities as determined by the creator's knowledge of available media and his skill in using them.

The conditions under which creative activity takes place must be suggested in this section, although a more complete account will follow in Parts III and IV. First, as creative activity is a response to an urge for new experience, the creative worker must be allowed by his social order to create with much abandon. As shown by Thomas and Znaniecki in *The Polish Peasant in Europe and America,*[31] the harder the "cake of custom," the less the likelihood of attempting new experience, in directions which society either disapproves or

[30] *Euphues.* One may regret—or rejoice—that even Lyly could find no word beginning with *l* to substitute for *having,* and so conform with *loving.*

[31] Richard Badger, 1918, and Alfred A. Knopf, 1927.

fails to encourage change.[32] Second, encouragement to new forms of expression comes also as a result of changed surroundings. The case of Russian children, in which new forms of play are developing, has already been cited. The same is true also of individuals whose situation is changed. Cellini, for example, developed new forms of expression when he came into possession of some exquisite Turkish poniards. "Mine," he says, in characteristic approval of his own work, "were far more beautiful and durable than the Turkish, and this for several reasons. One was that I cut my grooves much deeper and wider. . . . Another was that the Turkish arabesques are only composed of arum leaves with a few small sunflowers . . . in Italy we have several different ways of designing foliage. . . . I designed patterns of this kind, and filled them with gold." [33] The value of new environmental situations probably lies fundamentally in the increased likelihood of suggestions to the potential creator. Third, an external urge affects creative workers just as it does other persons. This urge is sometimes from economic conditions, and, at other times, from a desire to please some one—as a member of the opposite sex, or from a need to obtain a higher rating from one's fellows, including one's superiors, in or out of school.[34]

6. Æsthetic experiencing. Æsthetic experiencing is an empathic, emotional extension of oneself into a situation

[32] *Cf.* also George Boas, *Our New Ways of Thinking* (Harper & Brothers, 1930), pp. 42ff.

[33] *The Autobiography of Benvenuto Cellini,* translated by J. Addington Symonds (Reynolds Publishing Company, 1910), pp. 62–63. Other instances are contained in the same volume, as in biographical accounts of other creative workers.

[34] *Cf.* the discussion of the relation of economic conditions to motivation in Chapter V. See also de Vries, *op. cit.,* pp. 75 and 78.

which may have been, may be about to be, or is being expressed through creative activity. In contrast with direct sensory response or cognition, it is, therefore, an indirect response. As an accompaniment of creative activity or as the experiencing of what has already been created, this process employs the same data as creative activity—moods, unique experiences, standards, and media of expression. During creative activity this experience is a necessary accompaniment of what is already going on. When antecedent to creative activity, it is an empathic, emotional extension of oneself into one's surroundings and employs moods and standards of creative activity; but it employs media of expression only in an anticipatory way, as in any other process of prevision or planning. Creative activity itself may be frustrated, however, by unwillingness or inability to carry out the normal response to what is being experienced. When subsequent to this activity, this experiencing can be of varying degrees or depths, ranging from relatively passive musing to a complete reliving of the creative product. In low degree, this experiencing takes place, for example, when one listens desultorily to music while engaged in conversation or in reading, or when one passes rapidly through an art gallery. In high degree, this experiencing takes place when one abandons all else and devotedly follows the created product. At such times, an anticipatory process closely akin to creative activity itself accompanies the experiencing. This anticipation often accompanies such an activity as attentive listening to music. The listener finds himself running ahead of the music that is being performed, taking cues from the melodic or harmonic leadings of passages, as he constructs alternative patterns of his own. In many instances, an intelligent listener is able, in this way, to anticipate the exact musical pattern which is to follow.

Whether or not he is able to do so, he continues in this process and compares, musingly, the composer's creation with his own. This anticipatory activity is frequently called creative listening. Analogous instances are present in the reveries that accompany the experiencing of drama, poetry, the interpretative dance, and other art forms.

Æsthetic experiencing is one of the everyday functions of all normal persons. While the practical activities of life engage the attention of most persons for a large proportion of their time, there is, as Buermeyer indicates, a possible "ascending series" of æsthetic possibilities in these practical pursuits.[35] These possibilities begin with a recognition of the embodiment of something besides the directly practical value in practical objects. He cites the cases of the base-ball player, the mason, and the dramatist, embodied in whose works there may be the recognition of practical or economic values, and, in addition, a creative expression of unique, individual experiences. Most persons will observe, however, that the products of the butcher, the baker, and the candlestick maker are usually less well fashioned to produce æsthetic responses than the products of the poet, the dancer, and the musician. Outside the practical pursuits of life, there are the obvious opportunities for the æsthetic experiencing of natural and created objects of beauty. The butcher may, therefore, æsthetically experience his own somewhat artistic, or emotionally pleasing, display of meats, but he can go much further by following the avenues of such experience into music, the drama, and so on. Indeed, one may say with de Vries [36] that routine activities may ordinarily be carried on by

[35] Laurence Buermeyer, *The Æsthetic Experience* (The Barnes Foundation, 1924), pp. 19ff.

[36] *Op. cit.*, p. 200.

routine workers primarily to enable themselves to engage in æsthetic activities outside their narrowly prescribed vocational tasks. If, however, one regards the workaday world as devoid of æsthetic qualities one has only to expose oneself to the moving powers which operate during a window-shopping tour. Not only will the arrangements of artistic products, as jewelry and ceramics, be conceded to possess æsthetic qualities, but also the arrangements of relatively nonartistic products, as foods and workers' wearing apparel, will be regarded as at least incipiently æsthetic in form, spacing, and lighting.[37]

Analyses of æsthetic experiences indicate that such experiences are unique in the same ways and for the same reasons that creative activities are unique. The unique characteristics of an æsthetic experience can be clearly shown by comparing it with the act of appraisal. In appraising an object or an experience, as the work of Pasteur, there is an attempt to avoid personal feelings or emotionalized attitudes, and one tries to arrive at a conclusion that can also be reached by any one else who is equally intelligent and impersonal. The greater the personal, emotional tonus of the appraiser, the

[37] For a critical discussion of this point, see Z. Clark Dickinson's analysis of "The Psychological Approach in Economics Represented in the Work of J. A. Hobson" in *Methods in Social Science,* Stuart A. Rice, editor (University of Chicago Press, 1931), pp. 489–501. The foregoing discussion is not designed to drag æsthetics to low levels, but to suggest that there are incipient forms of art in many of the plain affairs of everyday life, and that art can be extended to the activities of almost every occupation.

The educational problems of this aspect of art teaching will be treated in Parts III and IV of this book. *Cf.* also Ethelwyn Bradish, "The Supervision of Art," in *The Supervision of Secondary Subjects,* by W. L. Uhl and others (D. Appleton and Company, 1929), Chapter XI. The economic value of æsthetics is, of course, obvious to every one.

less likely is his evaluation to have universal, scientific acceptability. The sheer truth of a scientific discovery may be appreciated; that is, it may arouse admiration, and, hence, it may produce an emotional effect. But this is a by-product, and it is secondary to the appraising process. In æsthetic experiencing, on the contrary, one seeks, emotionally and empathically, or even creatively, to further or promote an emotional condition, desired or already existing. Annoyance arises from a failure of a creative product to carry forward this primarily personal, unique, emotional process. While there may be an appraisal of the creative product, the point of reference by which evaluation proceeds is the individual attitude. The product must satisfy the conditions of the individual rather than the universal laws of science—it represents truth for the individual, but not necessarily for science or society in general.[38] It is a "good" primarily for the individual, and it is an intelligently acceptable "good" to the extent that it has been appraised and found to satisfy all the possible conditions and results of experienced objects.[39] Appraisal is problem solving, while æsthetic experiencing is an empathic balancing of moods, standards, and media in a creating or re-creating process. Appraisal deals primarily with external relationships; æsthetic experiencing deals primarily with internal relationships and employs external media only to balance internal conditions. In both processes, values are involved. The values involved in appraisal arise from a desire

[38] *Cf.* R. B. Perry, *General Theory of Value* (Longmans, Green & Co., 1926), pp. 93–99. The terminology may be more clear if one observes that the term *appreciation* is here understood to subsume both *appraisal* and *æsthetic experiencing.*

[39] John Dewey, *The Quest for Certainty* (Minton, Balch & Company, 1929), p. 265.

to adjust external conditions; the values involved in æsthetic experiencing arise from a desire to initiate, continue, or enhance certain satisfying internal conditions.[40]

The development of æsthetic responsiveness proceeds by interactions of sensory stimuli, emotions, and cognitive processes—the entire round of life. While one may safely say that few persons, who have had their innermost feelings aroused during an experience will subject themselves to analysis, yet some of the æsthetic experiences of every one can, without travesty or an absurd encroachment upon intimacies, be analyzed. Analyses of such experiences suggest that even the deepest feelings have analogous bases and counterparts. The difficulty is that the inner voices or influences are both thoroughly private and little understood by either an observer or the one who has the experiences. What comes to the surface as an overt expression is a multiplex emergent. Likewise, the æsthetic attitude—taste, standards, and so on—is an emergent from varied experiences, traceable, perhaps, but seldom, if ever, accurately traced.

Two sources of æsthetic attitude will be briefly reviewed—biography and psychological analyses. Biography often attempts to account for the æsthetic attitudes of its subjects. Although these attempts, even when sincere, are not always scientific or adequate, they are too important to overlook; in some instances they may be correct. At least, they are serious attempts at an analysis of a difficult problem. When, for example, Amabel Williams-Ellis records the somewhat contemplative existence of the boy Ruskin, there appears to be a combination of musings about the workaday activities of the street which passed his house, the construction of houses and their furnishings, and the seaside views during the

[40] *Cf.* Rugg, *op. cit.*

numerous family tours.[41] In his own *Praeterita,* Ruskin tells of many experiences which, if accurately related, probably formed his attitudes. Leonardo da Vinci's attitudes are accounted for by Rachel Annand Taylor in her painstaking analysis of early modern Florentine conditions.[42] Biographies of Haydn, Mozart, and Beethoven seldom fail, by their accounts of the training of these artists, to show the thorough early musical experiences of the masters. Autobiographies are equally replete with records of early experiences which seem to have contributed to æsthetic attitudes upon the basis of habituation.[43]

Dewey's psychological analysis of attitudes and the origin and construction of tastes or standards of æsthetic experiencing [44] traces attitudes to experiences which influence judgments of "the real worth of likings to enjoyments." [45] An experience may be enjoyed during its brief duration; its consequences may be either desired or undesired. Also, an experience may be recognized as unreal and contrary to known facts, as a satisfying or compensatory escape from one's actual conditions. An appraisal of the entire situation may lead one, accordingly, either to repeat the experience or to refrain from a repetition. Contrary to the old saying that there can be no arguing about one's tastes, Dewey holds that these are matters about which there is reason to argue, and,

[41] *The Exquisite Tragedy* (Doubleday, Doran and Company, 1929), Chapter III.

[42] *Leonardo the Florentine* (Harper & Brothers, 1928).

[43] *Cf.* Paul Vaillant-Couturier, *The French Boy* (J. B. Lippincott Company, 1931); Theodore Dreiser, *Dawn* (Horace Liveright, 1931); Sherwood Anderson, *Tar* (Boni and Liveright, 1926); James Joyce, *op. cit.,* and others, as mentioned in the above discussion of creative activity.

[44] *The Quest for Certainty,* Chapter X, and *Essays in Experimental Logic* (University of Chicago Press, 1916), Chapter XIV.

[45] *The Quest for Certainty,* p. 262.

therefore, to consider all the issues involved in a situation. A change in one's tastes might, then, follow this appraisal. Granting the dynamic power of what is known, one can escape responsibility for social or æsthetically undesirable tastes only by proving that one has too little appraising ability or that one's experience has been too narrow to allow the cognitive processes to have been stimulated. The drunken orgy would be in bad taste, on this ground, for the same fundamental reason that a lifelong jazz orgy would be. In both cases, there is either a deficiency in appraisal or a lack of extensive experience, or a combination of the two. The American who can not æsthetically experience Japanese music fails similarly. He usually lacks the experiencing of such music in a hospitable setting and concludes, on the basis of his provincialism, that the music is not good. The same can be said of all failures to experience æsthetically the creations which are found good by other intelligent persons. Historical examples of habituation to art forms through experiencing them are also found in music. Early forms of music allowed only the perfect consonance of unison or octaves. By the slow habituation of listeners, extreme dissonances have gained acceptance. Within the lifetime of any one who now accepts Stravinski, the same process of habituation has taken place.[46] In other forms of æsthetic experiencing also, as linguistics, the principle of habituation holds, although, from an æsthetic point of view, usage and pleasantness must reckon with intelligent appraisal.[47] From this analysis, one may conclude that æsthetic experiencing can be understood only through scientific study of it, and that, when understood, it is no

[46] *Cf.* Henry Cowell, "The Basis of Musical Pleasure," *American Mercury* Vol. XXIV, No. 95, November, 1931, pp. 372–376.

[47] Philip Withers, *Aristarchus* (1788), p. 408: "There is no *Concord of sweet Sounds* half so melodious as STERLING SENSE."

longer the mystery of the mystics. Sensitiveness to experiences, intelligent, individual appraisals of them, and habituation operate in æsthetics just as they do in morals and politics. Beyond this cultivation of any given taste, there is the development of new tastes. New tastes are cultivated after a creative worker has invented new forms or combinations. His new creations are then experienced and appraised, and, if they are not rejected, a new process of habituation begins.[48]

The conditions of æsthetic experiencing have been implied in the foregoing discussion, and, as they will be treated later, they need only be mentioned at this point. First, favorable surroundings are conducive to such experiencing. Creative products, like colors, are affected by their surroundings. Second, a desire for new or enriched experience needs to be aroused. Third, stimuli which are suitable for æsthetic experiencing by the individual in question must be provided.

Certain individuals may so fully disregard this function that it ceases to operate temporarily or even permanently. Complete engrossment in the "practical" may, for example, lead a Darwin to lose the inclination to certain forms of æsthetic experiencing, as music and poetry.[49] As Darwin was a man of many interests, including the æsthetic, his lack of enjoyment of certain æsthetic forms was probably due less to the inadequacy of his training than to his inability to find time for their indulgence. In his own account of the matter, he ascribes this failure to engrossment in scientific pursuits, and not to a general unresponsiveness to these æsthetic forms.[50] Samuel L. Clemens, the humorist, was, for many years, unresponsive to "good" music. His daughter accounts

[48] Perry, *op. cit.*, pp. 561–562.

[49] *Cf.* Francis Darwin, *The Life and Letters of Charles Darwin* (D. Appleton and Company, 1911), pp. 81 and 101ff.

[50] *Ibid.*, p. 81.

for this condition by relating his musical interests during his middle life. At that time, he customarily avoided affairs at which music was presented. This avoidance was difficult, for his daughter and, later, his son-in-law were musicians. That he was not lacking in the foundations for enjoyable musical experiences is shown in his play activities with his children. He was fond of strumming at the piano while a friend held the little children on his knees until the end of the song when the children suddenly "went boom." Very late in life, Clemens found that some of the "good" songs of his early years, as *Flow Gently, Sweet Afton,* were available on graphophone records. He then spent much of his leisure time listening to this music. In this case, it appears that a failure to enjoy other music was due to the inappropriateness, for Mr. Clemens, of the music to which he was subjected.[51] This difficulty of finding suitable æsthetic forms is, of course, present in the cases of many persons who acclaim their dislike for one or another of the art forms. As this is a problem of curricular content, it will be treated more fully in Chapter X.

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CHAPTER IV

THE GENETIC STUDY OF INDIVIDUAL MOTIVATION AND INTEREST

The Educational Importance of Motivation

In the discussion of creative activity and æsthetic experiencing there has been implied the presence of a driving, dynamic element. Creative activity is but the outward expression of a functioning motivation. There is reason to believe that the propulsive forces which actuate human behavior are operating most nearly in their natural state in such activity. All human activity, however, which may properly be termed progressively constructive, is the result of a single or complex motivating element. The genetic study of motivation presents nice problems for the student of individual psychology. It is the purpose of this chapter to examine some of the aspects of motivation in detail.

It is difficult to overstate the educational importance of a knowledge of the fundamental factors and objective techniques for securing motivated activity in pupils. One of the basic principles of learning—the Principle of Readiness—implies a motivated organism which is to do the learning. The importance of taking cognizance of this law in classroom procedure is becoming more and more apparent. To proceed to teach pupils who are in a condition of little or no readiness to learn is to be guilty of a grave pedagogical mistake.

It will be recalled that in the discussion of problem solv-

ing the persons involved were keenly interested in solving the problems. It was further pointed out that the vigor of the effort which is inherent in a real interest is lacking in the absence of such interest. For example, the farmers who were combating the deadly effect of alkali upon their crops may be said to have been truly motivated in their activity because their very subsistence depended upon their successfully solving the problem with which they were confronted. This is an example of one type of motivation. Further consideration will presently be given to various other types.

It is probably true that the majority of modern methods of teaching are only reasonably subtle efforts to secure motivated learning. The merit of the project method, for example, is inherent in the enthusiasm with which the learner attacks his problem. There is no sound evidence to show that most of the new teaching devices necessarily adhere any more closely than some former ones to the principle of learning. Their unique advantage, if, indeed, they possess such, is likely residual in the fact that they are based upon a more sound understanding of the pedagogy of attention and interest.

From one point of view it may be said that there are two general theories of the nature of motivation, one of which places a decidedly more acute responsibility upon the teacher than does the other. It may be assumed that motivation is almost entirely native, not only in its fundamental structural basis but also in its method of functioning. Individual differences in the zeal with which students attack their work are meant to be viewed as inherited differences in ability to act with enthusiasm. This theory makes things easy indeed for the teacher. Pupils' lack of attention in class can in no sense be thus attributed to any defects in teaching method.

The teacher's task is simply to present material in as systematic a fashion as possible and rely upon the native interest of the pupils to promote learning.

It may well be contended that, while attention, interest, and motivation probably have a fundamental structural foundation that depends upon heredity for its nature, there are many ways in which they may be built up through conditioning. From this angle a considerable responsibility rests upon the teacher to present subject-matter in a way which will make some appeal. This, of course, presupposes a knowledge of something other than mere subject-matter in the performance of a good job of teaching. An understanding of the nature of adolescent or preadolescent behavior is one requisite. At least a superficial acquaintance with the principles of conditioned reactions is another. Knowledge of the way in which to take account of individual differences, not only in subject-matter capacity but also in learning drives, is not to be overlooked. It is fairly likely that when the complete facts are known the differential in motivation and learning dynamics may be found to be greater than that which obtains between the ability of various individuals to master the content, as such, apart from their interest in it.

To summarize, it may be said that the educational importance of a knowledge of the theory and principles of motivated activity is the extent to which successful and efficient learning is dependent upon the actuating drive. It will be our purpose in the ensuing discussions to examine both the psychological nature of motivation and the factors and conditions which inhibit or promote it.

The Psychological Definition of Motivation

Even a superficial glance at the activities of the world reveals the importance of motive in everyday life. The artist is supposed to have produced his masterpiece with the guidance of some sublime and inspiring force. A great general devotes a lifetime to the assiduous study of military tactics in order to defeat an enemy whom he has detested from boyhood. The boy Hannibal, swearing his youthful oath of hatred against the Romans, established a lifelong motivation, perpetuated a family tradition and in a solemn youthful hour generated a drive which was to harass the mighty Roman Empire for decades and to result in the thunder of Numidian cavalry around the walls of Rome and the shattering of African spears upon her very gates. Another type of motivation is that of mother love. The musical virtuoso through the medium of notes gives thrilling evidence of the dynamic force within himself. In crime, too, it is seen that motive plays a significant rôle and that a distinction is drawn between the motivated and premeditated crime and the crime of ignorant or hasty action. No matter in what time or clime, in what race or creed or in what stratum of society, all human activity bears mute evidence of inner propulsion. Across the pages of history flash the great figures of the ages, their every act betokening the spirit which moves them though these spirits may be as different as the individuals themselves.

The principal difficulty with the average notion of motivation is in its lack of analysis and definition. It is true that in law, for instance, there is an effort made to ferret out the essential elements of the motivated act. Such an effort, especially when made by brilliant and well-trained individuals is bound to possess some merit. Early literature contains

many shrewd accounts of the hidden backgrounds of human action. Henry James, the novelist who wrote psychology, probably comes as close to a complete analysis of human motivation as it is possible to make on a nonexperimental basis. It is doubtful whether or not the study of the complex factors influencing human behavior can ever be subjected to a strictly experimental analysis. Much has already been done to describe elements of the structural basis of motivation in objectively defined terms.

Another difficulty with the popular or superficial view of motivation is the failure to recognize its genetic aspects. Educationally, these are perhaps the most important. Take fear for an example. There is no question but that the behavior of all adults is regulated in part by fear. These fears are likely more numerous among barbarous than among so-called civilized people. But even among civilized people, human action can by no means be said to be upon a strictly rationalistic basis. People are actuated not only by reason but also by phobias. With regard to these fears which influence human actions two general theories are held. One is to the effect that all or most fears are inherited. To that extent they are unavoidable. The other theory maintains that original fears are comparatively few in number. The latter theory seems somewhat more in accord with recent experimental findings. Watson,[1] in a long series of very interesting experiments, which have been in their general conclusions verified repeatedly, has demonstrated the way in which acquired fears come to be. The facts, as demonstrated, are both fearful and hopeful for education. Such facts are fearful because of the tremendous responsibility which is placed

[1] *Psychologies of 1925,* Carl Murchison, editor (Clark University Press, 1926).

on the educator. They are hopeful because of the indication that human beings are not the helpless victims of a multitude of terrible mental ghosts which are destined to haunt them throughout their lives. The conditioned fear, once established, is practically as devastating in its effect except for the possibility of reconditioning as an original fear. For this reason it is of paramount importance that primary conditioning be correct. It is probable that many associative fears are conceived early; this places a mutual responsibility along with the school upon parents. This, of course, implies the education of parents in the psychological principles governing the formation of conditioned responses.

To summarize: in its essential nature motivation is partly native and partly acquired. The native basis is largely embodied in certain fundamental wants and urges which are comparatively few in number but strong in intensity. These are variously termed instincts, prepotent drives, protoplasmic urges, human wants, and desires. The nature of this raw material of motivation will be discussed in the following section. No person can exist in a civilized and highly complex society by blindly following the dictates of biological motivation. Upon these vague but powerful substructures is erected a superstructure. This superstructure is called culture, refinement, sophistication, and the like. The extent to which these secondary motivating forces are effective is determined first of all, by the cogency of the original drive which varies from person to person, and, second, by the degree to which the conditioning or transfer has been complete. In the following sections of this chapter will be discussed both the biological basis of human motivation and the process and result of its alteration.

The Raw Material of Motivation

That all behavior is not equally powerfully actuated is a matter of common observation. It has been customary with many writers to infer differences in interior drive from noticed differences in exterior behavior. Furthermore, it is usual to classify more or less complicated acts directed toward the accomplishing of some fairly definite end into categories. When one tries to examine in detail, however, the inception and true nature of inner drive the problem becomes a complex one.

In general, it may be said that there are two sources of behavior reënforcement: natively preferred paths of conduct and emotional coloration. Smith and Guthrie have pointed out that all forms of conduct, with the possible exception of habit operating upon a routine basis, are systematically exhibited only when emotionally reënforced. They further state that even in the case of routine the original drive is emotional.[2] Certain other acts involving either a hedonic or a dangerous element carry inherent native emotional drives and are thus engaged in with avidity. Brain and Strauss have described the way in which pathological conditions affecting emotional organization may change the character and disposition of one's interest and lines of reënforced activity.[3] Devine stresses the importance of endocrine patterns in the determination of conduct.[4]

The problem presented by natively preferred paths is a

[2] Stevenson Smith and Edwin B. Guthrie, *Chapters in General Psychology* (University of Washington Press, 1921), p. 142.

[3] W. R. Brain and E. B. Strauss, *Recent Advances in Neurology* (P. Blakiston's Son and Company, Inc., 1930), p. 324.

[4] H. Devine, *Recent Advances in Psychiatry* (P. Blakiston's Son and Company, 1929), p. 272.

serious one. From one standpoint it seems rather obvious that the thing to do is to take man as he is and to proceed with the process of education from that point. If man's original nature were an unchanging entity (probably it is not, although changes take place very slowly), education would need to concern itself only with the condition of this nature at different ages. Recent discussions in the physiological field, however, make it appear somewhat probable that, over long periods of time, certain types of learned activity in a very wide sense of the word may be passed on to future generations. Neural pathways of diminished resistance known as "engrams" may well be an illustration of the fact that certain changes tend to persist. Differential exposure of parts of the organism to normal environment has resulted in phases of physiological gradients and dominance which are important components of the substructure of motivated behavior. The teacher as a manipulator of organisms and environment is, in one sense, contributing to the formation of future physiological gradients.[5] The type of change which takes place in the formation of a physiological gradient is not regarded as a Lamarckian character. At the same time it is almost necessary to discern some mechanism by which progressive changes in the phylogenetic scale, resulting in what have been commonly termed instincts, have originated.

The infant, then, begins life with certain types of behavior practically a foregone conclusion. In addition to these preferred pathways there are contained within each individual storehouses or reservoirs of reënforcing energy. Among the most important of these reservoirs of energy are the ductless glands. The action of glands and the nature of the

[5] C. M. Child, *Physiological Foundations of Behavior* (Henry Holt and Company, 1924), pp. 212–213.

chemical constituency of their secretions are not well known at present. It is certain, however, that they play a prominent rôle in the reënforcement of human action. Furthermore, as will be discussed in a later section, glandular activity is subject to laws of learning which enable one to enhance their reënforcing value to practically any act. This, again, is of unusual moment in education because the process of education involves the performance of many acts which are, in themselves, comparatively colorless and of small intrinsic interest to the individual.

The preferred pathways usually serve some biologically utilitarian end such as food-getting, reproduction, etc. Later pathways which develop through the process ordinarily called learning are usually designed to serve utilitarian ends of a social sort. Social utility, however, is a more remote goal and one which is less well understood by the individual in early years. One of the tasks of education is to divert the biologically powerful but frequently uneconomically directed drive to the producing and strengthening of socially acceptable and useful conduct.

The Growth of Motivation Through Learning

Although native in its fundamental elements, motivation toward special types of action comes to be the result of reaction to certain classes of stimuli which, through conditioning and neural drainage, have early become capable of producing reënforced and sustained activity. The question at once arises as to whether or not all essential motives are of visceral origin. Hurlock has attempted to distinguish between incentive and motive. She regards incentive as consisting of conditions which are externally controlled and

which produce activity on the part of an organism. Motive is viewed as pertaining primarily to forces from within the organism which impel action.[6] Hurlock points out, however, and perhaps the corollary is more significant than the theorem, that such a distinction between motive and incentive is purely arbitrary and that they may be viewed as different aspects of the same process. Murphy and Murphy insist that certain motives are not entirely of visceral origin. They contend that certain classes of stimuli (color, tone, etc.) have an intrinsic, attention-holding ability which precedes any internal visceral commotion. They further maintain the possibility that gregariousness may be innate.[7]

Even though certain stimuli may be intrinsically interest-getting as Murphy and Murphy contend, there still remains much to be said about the subject of acquired motivation. As a matter of fact there is no essential conflict. Stimuli which are inherently interesting come to be added to visceral drives as the original factors in learned or conditioned preferences.

Prejudice might be taken as an example. A prejudice may be defined as a belief or action tendency which possesses considerable strength but comparatively little logical or rational support. Most prejudices are probably learned reactions, but they may serve as very powerful motivating forces in the individual. Olson and Jones have done some very interesting work upon the measurement of emotionally toned attitudes. They find differences which are statistically reliable between lists of experimental words and responses to control words. Of the experimental words, most vigorous re-

[6] E. B. Hurlock, "The Psychology of Incentives," *Journal of Social Psychology,* Volume II, Number 3, August, 1931, pp. 261–290.

[7] G. Murphy and L. B. Murphy, *Experimental Social Psychology* (Harper & Brothers, 1931), p. 83.

sponse was elicited to those which had some reference to sex relations. Second in strength were responses to words which were used in connection with religious questions.[8] Unless one holds for a religious instinct, as such, the latter were probably examples of learned, emotionally toned attitudes.

The process of learning in the case of acquired interest and motivation is essentially no different from learning in any other function. The laws of conditioning and association of response hold here as elsewhere. Stimuli which are originally inadequate to produce a strong, emotionally reënforced response come to do so through their presence at a time when the reaction is being given to the native incentive. Two points are to be noted in connection with this phenomenon. The first is that it is not necessary to go back to the original incentive in every case of conditioning. When there has been established one level of motivated responses upon the originally adequate incentive, one may proceed to build secondary and tertiary levels upon the level first removed from the original. This fact is also of great consequence in the field of education. Schoolroom procedure would be much less efficient than it is at present if it were necessary in every case to return to originally interesting stimuli to produce motivation. A second point is the importance of minimal signs in the acquiring of emotionally toned behavior. Mention has been made of the place of minimal signs and cues in problem solving. Fully as much may be said of their importance in the field of motivation. When one acquires an inexplicable dislike for some individual, it probably depends upon some of these minimal stimuli cues which, through a

[8] D. M. Olson and V. Jones, "An Objective Measure of Emotionally Toned Attitudes," *Journal of Genetic Psychology,* Volume XXXIX, Number 2, June, 1931, pp. 174–196.

process of association, connect the disliked person to an originally distasteful situation. When an accurate analysis of an attitude is impossible, such expressions as "an instinctive dislike" are used. All that is meant is that the association is not sufficiently clear to permit its analysis in terms of an originally unsatisfying condition.

Although all depend upon the same psychological process, it is customary to distinguish several types of motivated activity. These are enumerated and discussed in the following section.

Types of Motivation

In attempting to classify types of motivation under headings which make even a pretense of being definitive, the difficulty of so separating categories of human behavior on the basis of observed differences in type is recognized. In the types of motivation given, the native elements are not present in the same proportion; for example, some come more nearly being strictly biological than others. Furthermore, no effort is made to draw a rigid line of distinction between motive and incentive. When religious motivation is mentioned, it is not meant to imply that it is exclusively internal or native. Reference is had solely to strong responses on the part of a given individual to situations which we ordinarily call "religious." Incentives are simply situations which produce these types of reënforced response. These may be either native or acquired. Neither is there any inference that all people possess all the types of motivation herein listed. Some persons seem actuated almost entirely by one type. The classification is simply in terms of situations which elicit reënforced responses in considerable numbers.

The following types of motivation may be noted: (1) economic, (2) social, (3) religious, (4) idealistic, (5) hedonic, (6) compensatory, (7) ambitious, (8) pathological, (9) superstitious, and (10) motivation based upon capacity. A few words of explanation of the several types of motivation may perhaps serve to clarify the nature of each.

1. Economic. Economic determinism is a well-known principle to both the political and philosophical theorists. Human beings are undoubtedly actuated to a considerable extent by economic motives. Particularly is this true in a society which stresses competitive activity as the basis of subsistence. The Roman rabble, depending upon free bread and free circuses for the maintenance of life and contentment, could not be said to have been driven by an economic determinism of the sort which exists in the United States to-day. It is quite possible to develop a class of the population which is not actuated by a desire to acquire as much of the world's goods as possible. In this country a somewhat different state of affairs obtains. The nature of the educational process has inclined people to a realization and appreciation of a number of commodities. The standard of living is considerably higher than it has been in other times and places. To the extent that greater effort is needed to secure such commodities, behavior in this country is economically determined. Economic unrest appears more surely and earlier than in places in which the standards are not so high. The connection between acquired economic motivation and biologically and natively motivated action is obvious. Reduced to its lowest common denominator, effort in the modern economic field is directed toward supplying fundamental biological wants such as hunger. To appease hunger one must have food, to secure

food one must have money, and to secure money one must work. If additional commodities other than those which minister to mere biological necessity are desired further work is necessary. To live in a state of luxury even greater effort must be expended. The chain of events is thus clearly set off. One may say that all people are economically motivated to the extent of an effort calculated to supply fundamental needs and that, beyond this point, differences occur which depend upon native variations in individual desire plus early training.

2. Social. Social pressure is a real incentive. It is of several varieties depending upon the size of the group. Social compulsion furthermore may be either pleasant or unpleasant in its effect. The ties of family affection, for example, whether they be filial or parental are an example of social motivation in the primary group. Social morality, on the other hand, illustrates the influence of larger groups upon the individual. Legal processes and legislation in general illustrate the expression of the larger social group in its efforts to control individual behavior and conduct. In the classroom we see many examples of social motivation. The restraints imposed upon the individual pupil in the interest of economical group procedure are bound to generate occasional emotional disturbances through blocking. This drive may be used to further effective school work or may be dissipated in random activity or positive disciplinary disorder. The task of the teacher in the schoolroom as a social situation is to make the most economical use of pupil energy regardless of the nature of its inception. One good example of how this may be done can be seen in the use of games. In games the spirit of social rivalry which frequently dissipates itself

in useless pupil activity is employed in the interest of content mastery.[9]

3. Religious. Religious motivation is one of the strongest. The long list of those who have dedicated their lives in the service of some religious ideal is sufficient evidence of the powerfully actuating force of this type of motive. The same may be said of the ethical influence in the individual's life. The fundamental basis of a conditioned interest in religious matters is not difficult to analyze. Self-preservation is a fundamental law of biology. But it is a matter of common observation even among primitive peoples that the organic elements of the individual organism can not be preserved intact indefinitely. It is, therefore, entirely natural that there should spring up the belief in another sort of individual persistence—that of the mind or the spirit. In different variations this constitutes the fundamental element of many religious creeds. When there is added to this the assumption that individual persistence after death is conditioned upon the performance of certain earthly acts, then the motivation behind the whole category of religious observances is evident. No effort is made herein to pass upon the merit of the case. For the purpose of the psychologist it makes little difference whether the facts as postulated are correct or not. In either case the mechanism of motivation within the organism is the same.

4. Idealistic. Idealistic motivation on a pure level is denied by some. To the extent that an individual is materially egocentric the possibility of altruistic action is diminished. If one subscribes to a strictly materialistic view of life, then love,

[9] *Cf.* Robert A. Davis and C. R. Ballard, "The Effectiveness of Various Types of Classroom Incentives," *Educational Method,* XII, 134–145 (December, 1932).

honor, and the like cease to exist. There is considerable feeling on the part of some educators that idealism has too little place in our present educational system. People who hold this notion grant that the school is teaching well the routine content subjects but is failing to impart certain ideals which make for better citizenship and sterling character. Therefore, an effort may be detected in progressive school systems to minister to this need and supply some sort of character training.

5. *Hedonic.* The traditional view of the nature of hedonic motivation is that it is embodied in the motto "Drink and be merry for tomorrow we die." Accepted upon this level, this philosophy of life is apt to lead to a narrow and materialistic sort of existence. It is motivation based upon protoplasmic urges satisfied upon nearly their natural stratum. Epicurus himself, of course, did not argue in either his personal life or his writings for licentiousness. The doctrine of pleasure as a guiding principle does not necessarily imply pleasure upon a low level. A person may be a thorough-going hedonist and yet have his pleasures pitched at such a standard as to be entirely ethical and moral in his behavior. For instance, one type of hedonism emphasizes play and its importance in governing behavior. A splendid example of this wholesome attitude is embodied in an old Russian proverb which, freely translated, reads, "One does more for pleasure than one would do under compulsion." This contains an element of real and lasting truth. The theory that whatever makes one happy must in some way be wrong should surely never be held by any one whose duty it is to teach children.

6. *Compensatory.* In compensation as motivation are found some of the most interesting turns of human behavior. One class of compensatory activity is illustrated by the practice

which Demosthenes was supposed to have engaged in while learning to be a great orator. An organic speaking defect forced him to practice continually. Another type of such activity, although of a less desirable sort, is indicated in revenge as a motive. It is not difficult to find instances of persons who have spent a whole lifetime in seeking revenge for some real or fancied injury. Adler has pointed out that defects of various sorts are apt to serve as a motivating force for activity which is calculated to overcome the defect and make the person powerful and prominent in the performance of an act which the original defect would have made difficult.[10] Every one encounters obstacles to progress in a social environment and thus his action is to some extent motivated by compensatory factors. One of the things to be closely watched, especially in the teaching of children, is to guard against a predominance of behavior becoming compensatory. It is possible to become so engrossed in the correction of defects or the offsetting of thwarting situations as to fail to formulate any program of action which is independent of these elements.

7. *Ambitious.* Motivation through ambition is well illustrated by such a man as Napoleon. A consuming zeal exerts one of the most complete monopolies possible of an individual's actions. Psychological analysis of the nature of ambition reveals it as being composed of two principal elements: a native interest in an endeavor based upon capacity, and success in a chosen activity or pursuit. The reciprocal activity of these two variables constitutes a circular process which results in cumulative reënforcement. Napoleon possessed certain characteristics of a good soldier. Training in military

[10] A. Adler, *The Neurotic Constitution* (Moffatt, Yard & Company, 1917).

affairs gradually increased his interest. Successively greater triumphs on the field of battle enhanced his enthusiasm. The whole series of events illustrates nicely the interaction of the factors mentioned above. The same thing occurs in school. Every pupil should be allowed to enjoy the good results of a reasonable amount of success. Otherwise, desire to do further work well will languish and die. Some administrators regard the preservation of pupil interest as important enough to cause them to be unwilling to give failing grades at all. Psychologically, there is much to be said for this practice of giving no failing grades.

8. Pathological. The essence of pathological motivation is an undue exaggeration of some ordinarily though not necessarily harmless interest. Unfortunate early conditioning or training may leave an individual with a persistent incentive of a pathological sort. Of special note in this connection is the so-called "fixed idea." As a motivating entity the "fixed idea" is not necessarily detrimental or harmful. Morgan has pointed out that the element of perseverance may have a pertinent relation to one's success in life. As a matter of fact, he regards persistence as a commendable virtue. He contends, and probably rightly, that ambition contains a substantial proportion of fixation and cites the attitude of Charles Sumner on slavery to support his point.[11]

9. Superstitious. It is not for a moment to be supposed that human conduct taken by and large is actuated solely by intellectual or rationalistic motives. Ethnological and sociological studies show upon how wide a scale there exists human behavior which is driven by superstition or false belief. Furthermore, action grounded in superstition is no less vigor-

[11] John J. B. Morgan, *The Psychology of Abnormal People* (Longmans, Green & Co., 1928).

ous than that based upon rational data. Probably some of the world's wars could have been avoided were all human conduct grounded in such pondered evidence. Fortunately, there is great latitude for improvement in rational thinking. Caldwell and Lundeen have concluded that the combined influence of experience and education minimizes the extent to which action is based upon false beliefs.[12] One of the great tasks of education and the teacher is implied in these findings. It is to teach pupils to rationalize motives or to subject impulsive tendencies to rational analysis before acting.

10. Structural capacity. Much of human conduct is a natural result of the physical mechanism which is inherited. Any organism, like any machine, is limited in the extent to to which it is capable of performing certain functions by the nature of its mechanical make-up. Wide ranges of variation occur in the extent to which individuals approximate the limits of their structural capacity or approach the physiological limit of which they are capable. These, however, are relative variations and do not affect the absolute point beyond which it is impossible to proceed. Thus, a large, husky lad is naturally thrown in the direction of games which require considerable physical exertion for their successful execution. Perhaps he becomes a football player. His size and weight, if accompanied by interest in the game, make him comparatively successful. This leads to a desire for more participation of the same sort. This generates more skill which in turn enhances the desire. The final interest and drive rest upon initial capacity and ability.

[12] Otis W. Caldwell and Gerhard E. Lundeen, *An Experimental Study of Superstitions and Other Unfounded Beliefs* (Bureau of Publications, Teachers College, Columbia University, 1932), pp. 121–122.

Genetic Aspects of Motivation

Certain general considerations with respect to the nature and development of motivating interests have been examined in some detail. Of equal moment is the course of incentive growth within the individual.

Some very intriguing ideas have hitherto prevailed in psychological thinking concerning the way in which interest develops and changes within a given person. Alluring as these theories have been, scientific evidence has not always been forthcoming to substantiate them. It has been held that the life cycle of an organism reënacts in a general way activities which have had racial utilitarian and survival value. Furthermore, this recapitulation of race interest and activity was supposed to occur in a fairly systematic and predictable way within a single lifetime. Liking for hunting from this standpoint is easily explained. The prominence, importance, and utilitarian value of hunting at certain stages of the race's development can scarcely be denied, but the principal problem arises in the determination of just what mechanisms could be involved in the transmission of the liking. This theory has profound educational implications. If interest stages are nothing more or less than a series of recrudescences of former race activity, then there is something quite definite upon which to base an educational program. One does not have to search far to find that those who subscribe to this point of view have developed a definite type of school curriculum to correspond to the theory. It is also believed that there are nascent periods of learning in which each subject is more economically and efficiently learned than at any other time of life. Such nascent periods of learning do not

depend upon the fact that children are more pliable and teachable during childhood but involve a greater degree of specificity with regard to the particular functions concerned. In some ways this theory possesses plausibility. Walking, it is true, appears at a fairly characteristic time in the development of the child. However, it is more likely that such an appearance is the result of a strictly mechanical and structural development. The maturation and growth of the individual have produced a machine which is capable of the act called walking, and in a living organism it is perfectly natural that the walking should take place. Regarding as specific a function as learning the French language, it is not so easy to demonstrate that any one time is the best. Generally speaking, it may be said that because of the process of maturation there are periods in which it is probably advantageous to begin the teaching of some functions.

Trow has mentioned wants and needs as the basis of developing motivating forces within the individual. He includes them under two general heads, psychological and social. Psychological needs consist of play, effective effort, and order, while social needs are social recognition and service.[13] The relation of these needs to each other and the proportion of them as a whole vary during the course of the individual's life and consequently produce changes in motivation. Play, while quite needful for the adult, is probably not so necessary as during earlier years. The organism becomes progressively less able to play certain types of games. Less ability, by a process which has been described in a former section, leads to less interest.

The following points may serve to summarize the facts in

[13] W. C. Trow, *Educational Psychology* (Houghton Mifflin Company, 1931), pp. 32–44.

connection with the genetic growth of interest during the individual's life. First, maturation of gross morphological structure leads to an early attention to the employment of the parts in such activities as play. The resulting exercise develops skill and adaptation in the use of the part. As limits of ability are reached, interest tends to level off along with practice. Second, the increase in complexity of the environment forces attention in the direction of solving problems. This soon promotes an intellectual or rationalistic interest in the world. During this period occurs the best opportunity to lay the ground work in the school subjects on a fundamental basis. Third, acquisition of a passable amount of physical skill in the fundamentals of race knowledge and more or less efficient adaptation to social conditions leave the individual time for the resolution of general problems of human existence. One is thus not surprised to see the more advanced in age concerned with speculating upon the abstract problems of the universe. The explanation is not necessarily that age is a prerequisite to efficient abstract speculation, but it is in accord with the principle laid down in the discussion of problem solving that individuals are most interested in and work most efficiently at the solution of problems encountered in the overcoming of some thwarting obstacle. During early years of infancy these obstacles are apt to be physical, during middle age they are mental, and during old age they are ethical and spiritual.

1. *Interest, capacity, and success.* Mention has been made in the discussion of motivation through ambition of the importance of success in determining interest. The relation obtaining between interest, capacity, and success is worthy of attention. For it is manifest that attention maintained steadily in a line of endeavor in which one is doomed to

meet with no success is futile. Likewise, it is inefficient to allow capacities to go unused in a vain effort to develop an ability which is not nearly so promising.

Offhand, it might seem that no great relationship exists between interest, capacity, and success. Observation of pupils who are engaged in some line of endeavor in which they are almost hopelessly bound to fail inclines one to the belief at times that children become enamoured of the idea of attaining proficiency in one line or another comparatively independently of their ability to achieve success. It is easy to point out numerous examples of this sort. It is to prevent pupils from going into work for which they are not fitted that many fairly good prognostic tests have been developed. The service of these tests lies in their prediction of success or failure before costly time and effort have been spent in vain.

When the situation is examined more closely, it becomes apparent that there may be some relationship between interest and success. Symonds has pointed this out in discussing tests and interest questionnaires in high school guidance.[14] He maintains that, in the long run, the choice of the individual pupil may be a reliable criterion to employ in selecting a curriculum. This statement is supported by the dual contention that present interest, except in very young children, depends upon past success and is, therefore, indicative of probable future success, and that choice is colored by information which the pupil has already secured about the chosen work. Symonds by no means holds for a very high relationship between interest and achievement in gen-

[14] P. M. Symonds, *Tests and Interest Questionnaires in the Guidance of High School Boys* (Bureau of Publications, Teachers College, Columbia University, 1930), pp. 56–61.

eral. In situations where an aptitude can be exercised there is likely to be a relation between interest and aptitude.

In addition to the extent to which liking for chosen fields is predictive of success or indicative of capacity, there remains the problem of securing improved results through the raising of incentive. It is a well-known fact in the field of mechanics that most machines operate at very low efficiency. Heat, friction, defects of structure, and many other factors cut down their theoretical efficiency. Man as a machine is no exception. But, in addition to the mechanical and structural defects with which human organisms must contend in raising their efficiency, there are also mental vitiations. Hurlock has made a rather exhaustive summary of the effect of incentives upon the performance of human subjects in various types of work.[15] Most of the experiments which she cites show a rather material improvement and closer approximation to the physiological limit and capacity when incentive is high. She mentions knowledge of results, praise and reproof, reward and punishment, and the influence of an audience as contributing to the raising of scores. One point is especially applicable in the management of schools. On the basis of a rather considerable number of experiments, the present conclusion seems to be to emphasize rewards rather than punishment as effective motivating devices. This is an experimental verification of the belief of many present-day administrators.

Although dogmatic conclusions can not be drawn on the relations between interest, capacity, and success, the following points may be noted in summary. First, interest is of value in determining probable success, especially when it has been developed through some previous though unsystematic

[15] *Op. cit.*, pp. 261–290.

practice. Second, incentive partially compensates for defects in capacity. This fact also accounts for the rather low correlation between intelligence and school success. Such correlation is probably caused by the fact that drive and effort are compensating for lack of ability. Third, when a pupil has chosen a vocation fairly well adapted to his capacity, the development of incentive is of value in assuring an effort which will produce results approximate to the learner's capacity.

2. Conflict and thwarting. Many reaction patterns, both native and acquired, fail to bring the organism into complete adjustment with the environment. When blocking of a response occurs, a cumulative internal emotional reënforcement is set up. But the blocking of the response prevents its release. There then ensues what is known as conflict. This occurs in all people in varying degrees. When present in exaggerated amounts it results in hysterical behavior. It is worth noting that such behavior does not lack motivation. As a matter of fact, it is probably overmotivated. It lacks system, balance, method, and direction. It is comparatively useless. Smith and Guthrie have pointed out that although hysterical acts are of small utilitarian value they frequently picture the purpose the inhibited act would have served had it been executed.[16]

Blocking of a response with consequent unsystematic and random behavior may be a source of loss of efficiency in the school. Hartshorne and May have demonstrated that real though subtle differences between teachers exist in the extent to which they provoke deceitful behavior in pupils.[17] Deceit

[16] *Op. cit.*, p. 146.

[17] H. Hartshorne and M. A. May, *Studies in Deceit* (The Macmillan Company, 1930), p. 329.

is probably the result of blocking. It is simply one of the ways in which a response which secures a more adequate, although less ethical, adjustment is substituted for another response which has proved unsatisfactory.

Thwarted responses do not necessarily lead to inefficient or useless activity. The emotional drive may be turned to very good purpose. According to the simple principles of conditioning, an individual tends to busy himself with whatever in the environment seems fairly prominent. If the blocking has not been too great, and in school it usually has not been, then the resultant drive may be used to reënforce and make more efficient the legitimate tasks of the school. Murphy and Murphy cite studies of the nature of conflict in the classroom.[18] Notes were taken of a controversial conversation in a class. The part played by each individual was observed. The response differentials of different pupils to the same irritations were noted. It was hoped in this way to formulate some general principles of types of human response in group environments.

An amount of confusion almost invariably follows blocked responses. The etiology of confusional psychosis is somewhat obscure. A condition of toxic exhaustion is usually present.[19] Malnutrition, focal infection, overwork, and similar conditions all contribute to the aggravation of a confusional state. An individual is more likely to be unreasonable and violent in his reactions to blocking while ill than in a state of good health. This fact is easily understood. The irritation at the inconvenience and pain of illness become attached to the blocking situation reënforcing it.

Sometimes the external inhibition leads to regression. The

[18] *Op. cit.*, p. 551.
[19] H. Devine, *op. cit.*, p. 60.

boy or girl who is not aggressive and pugnacious when thwarted in the performance of a desired action tends to withdraw into a state of more or less complete self-containment. An exaggerated and continued condition of this sort eventuates finally in the terrible form of insanity known as dementia præcox. To this dread derangement, children of high school age seem peculiarly susceptible. Every teacher should watch regressive tendencies on the part of pupils. Leanings toward undue speculation or self-withdrawal should be curbed. All students should be required to undergo a certain amount of socializing experience.

Not all conflict comes from the urge of natural desire to express itself in situations where opposition is encountered. Conflict may easily arise when an individual is dallying between two nearly equal sets of inducing stimuli. An ancient proverb, referred to above, describes the donkey that starved to death betwixt two bales of hay. The point illustrated is applicable. An organism, balanced amid two equally attractive stimuli, becomes mutually inhibited, wavers and suffers from a terrific emotional disturbance. Experimentation with animals has shown that neurasthenia may be produced by subjecting an animal to the necessity of choosing among situations which are very nearly identical when one has been established as a conditioned stimulus for food. The animal usually wavers in trying to make the choice and finally ends with highly nervous and excitable behavior indicating the emotional disturbance which has resulted from the mutual inhibition. As psychiatrists point out, many neuroses have their foundation in divergent desires. The late grade and early high school years are of considerable importance in the prevention or causation of conflict which will persist later. These years are important because the ill effects tend to become

cumulative, and when an individual has failed in making one adjustment the consequent conflict and uncertainty of behavior unfit him for the solution of future problems.

The pedagogy of conflict prevention is important but not particularly profound. Dangerous as are the effects to the individual of failing to resolve conflicting situations satisfactorily, the prevention of the same except in a slight minority of cases depends largely upon attention at the crucial time. One noteworthy point is the necessity of making a definite decision followed by an energetic program of activity. Careful scrutiny of the relative desirability, probable outcome, and general nature of the situations between which the choice is being made is entirely fitting and proper. The trouble arises almost invariably when the analysis becomes tinged with worry and when the worry becomes habitual. When one bears in mind the far-reaching organic and physiological effects of worry and other similar activities, it is quite easy to understand why the behavior of hysterics and neurotics is so unsystematic and inefficient. Although one is bound to make a certain number of mistakes when clear-cut and definite decisions are made and followed by a vigorous program of action, it is highly probable that in the long run the detrimental effects of such errors are considerably less than the continuous corrosion of indecision and unbalance between alternatives. Continued vacillation leads to a condition of chronic tension which is especially harmful. Decision and subsequent action may result in fatigue, but it is on a more healthy basis both physically and mentally than the unnatural bodily preparation for action which never occurs. Consequently, teachers should drill pupils in the art of completing tasks and making decisions. Hundreds of chances occur daily in the ordinary mill-run schoolroom procedure which serve

very well as practical exercises in the analysis of puzzling alternatives and the choice of the one to which to adjust. This is no plea for hasty or unreasoned moves. These are fully as detrimental to one's success as the extreme of over-long delay.

In conclusion, it is the teacher's task to promote mental hygiene by guiding pupils in the solution of problems. The technique and principles of problem solving have already been discussed in a previous chapter.

3. Desires and wishes. Desire and wish are potent forces in the dynamics of human action. Both are strongly reenforced emotionally. In the case of the wish the final response is delayed, inhibited, or postponed. This is not necessarily true of desire. The two are similar, however, in that each represents either incipient or projected action which is colored emotionally.

Many peculiar phases of human behavior are well explained by the desire or wish motive. A university infirmary usually has a much more substantial list of patients in the few days preceding final examinations than during any ordinary day of the quarter. It probably would not be accurate to call this absolute malingering. The failure of the patient to recognize pseudo-malingering is one of the characteristic forms of such behavior. Symptoms which, on the eve of a football game tend to be minimized, are magnified in importance before a final examination especially if the pupil is not well prepared. The same thing was true during the late War. Few men would forego the pleasures of a furlough for those of the infirmary. Many, however, felt capable of sacrificing a day's drill with the rifle for a stay in the infirmary. Instances of this sort can be multiplied indefinitely. They con-

stitute a frequent occurrence in everyday behavior and are common in the schoolroom.

Strong desires, however rigorously repressed, do not evanesce. Instead, they are apt to undergo a process known as conversion. The feeling denied expression in one medium seeks it in another. Many symptoms of morbidity are mere substitutions for inclinations toward an entirely different category of conduct. Overstreet has given an excellent picture of this alternate behavior in his discussion of dreams.[20] He emphasizes the fact that dreams are not due to air-blown chance. Instead, in the majority of instances, they constitute a substitute type of expression. The substitution is most apt to take place when continuous or violent inhibition has occurred. Smith and Guthrie have pointed out that, although a wish may be present when the consummatory act is possible and in progress, its strength is likely to be greatly diminished because of the possibility of early realization.[21]

Several essential implications for the technique of teaching are inherent in the facts concerning the nature and function of desires and wishes. First of all, it is the task of the teacher to determine whether sickness, malingering, and other forms of evasion are real or fabricated. The pedagogy in each case is, of course, different. It is manifestly unfair to treat a person who is actually ill as a malingerer. Even pseudo-illness or evasions of real situations through conversion are entitled to more delicate treatment than out-and-out dishonesty. With grade school and high school pupils the technique of deception is still comparatively unperfected

[20] H. A. Overstreet, *About Ourselves* (W. W. Norton & Company, 1927), pp. 94–97.
[21] *Op. cit.*, p. 137.

and the distinction should not be too difficult to make. Second, useful and profitable activities should be substituted for random and aimless behavior. Holt, in an illuminating discussion of the nature of responses to mild annoyers, has indicated that one is continually encountering situations, conditions or people who are irritating. In cases where the irritation is not violent enough to provoke an elaborate or vigorous response, conduct is apt to be characterized by much useless and diffuse behavior. Holt further points out that the elements or reënforcement may well be turned to the strengthening of some positive course of action.[22] Third, goals which are attainable should be set up both in the more formal organization of the curriculum and in the everyday objectives of classroom procedure. The nature of the objective is of extreme importance in learning. It seems to be true, and this fact explains much of the failure to secure adequate learning in school situations, that learning occurs best and sometimes only in close proximity to the goal. Holt has emphasized this strongly.[23] Success has been mentioned previously as a requisite of adequate and efficient learning. It depends upon having proximate goals which are easily attained. A remote teleological objective may be well worth years of effort for its attainment, but children are not easily motivated by distant goals.

4. Volition and will. Some aspects of the problem of voluntary action are closely allied to motivation. If pupils are mere automata, obeying nothing more than laws of mechanics, then it is not just to judge them in their shortcomings as though they had "free will." If a pupil does not study

[22] E. B. Holt, *Animal Drive and the Learning Process* (Henry Holt and Company, 1931), pp. 149–150.

[23] *Ibid.*, p. 164.

because he has not chosen to do so and is thereby responsible, that is one thing; if he is a helpless victim of his environment and previous training, that is another. Lawyers have often contended that criminals are not to be held responsible for their acts, because either through heredity or faulty training they have been sacrificed to a system over which they have no control. Others firmly believe that man is complete master of his destiny and is to be held accountable for his acts. It is probable that the truth resides in neither of these extreme points of view.

It is unnecessary to postulate free will as a mental or spiritual entity to account for voluntary action. That organisms, even on a comparatively low scale, make choices can not be denied. Observations of animals in many types of situations, however, incline one definitely to the belief that these choices are not guided in any mysterious fashion. Frequently they are of the trial-and-error or trial-and-success variety. Some responses are immediately accompanied by an unsatisfying or painful state of affairs to the organism. These tend to be avoided. It is then said that the animal has "chosen" a propitious or favorable environment. Future choices will be conditioned by past habit and experience. Bolton has emphasized this point in discussing the genesis of voluntary action.[24] He points out how great is the dependence of a "voluntary" action of the present upon practice elements in the past. Choices are probably made by the joint operation of memory and partial analogy. A new situation presents itself. One is confronted with the necessity of making a choice of alternate modes of action. He remembers experiences in the past which, at least in part, resemble the

[24] F. E. Bolton, *Principles of Education* (Charles Scribner's Sons, 1910), p. 706.

situation in which choice is being made. The effects or consequences of past courses of action are also recalled. Unless a pathological condition is present, such as sadism, masochism, etc., one is likely to choose the course of action which resembles a former type of conduct that was followed by satisfying results or efficient consequences. In general, the correctness of one's choice is proportionate to acquaintance with or experience in the situations which are being pondered. Where all the elements are new, of course, the decision is theoretically a random one. If these contentions be true, the implications for schoolroom procedure are patent. Pupils must be made familiar with types of situations which they will later encounter. They must be given practice in making decisions in a variety of circumstances. They must experience, either vicariously or at first hand, the results of varying courses of action under different conditions. Thus, their future decisions will be based upon a solid foundation of past experience. The individuals who rise to supreme heights of specially motivated behavior in great life crises are the exception rather than the rule. Ordinarily, in the climacteric situations one makes decisions and chooses courses of action precisely in terms of previous conditionings.

Where no element of balance is present, it can not be said that a choice has been made, a decision reached, or voluntary action exhibited. Balance usually results in delay of the decision. During the interim, both external and internal conditions change. These changes reënforce one or the other of incipient response tendencies and the ensuing conduct is called voluntary action or controlled decision. Particularly during the period of adolescence, pupils are inclined to find themselves balanced between divergent courses of action. Some of these are socially acceptable; others unacceptable.

It is the teacher's task to furnish the necessary elements of reënforcement for the proper response tendency. If a boy who plays upon the football team, for instance, begins to show an inclination to indulge in unsportsmanlike tactics, it may not be sufficient to point out that the rules forbid them and exact certain penalties, but if the coach adds his influence to that of the referee and rules that the lad may not play upon the team in any future game, this may turn the tables, particularly if the individual is fond of the game being played.

Lindworsky, in discussing the training of the will, has stipulated two conditions necessary for success. One requisite is a systematic scheme of values and the other, an integrated orientation toward these values.[25] One may hold that values are either static or relative. Modern technique seems inclined to the theory of relative values. Relative values are largely dependent upon training. The training should be such as to guarantee consistency of response. This consistency of response is part of the groundwork of the integrated personality. The nature of normal conduct and the principles of personality integration will be discussed in a later chapter.

Motivation and the Activities of the School

All teachers are confronted with the problem of motivating the everyday work of the classroom. Custom and trial-and-error have developed certain timeworn devices which are used to this end. The paucity of resource and lack of versatility exhibited in furthering pupil attention are deplorable. The use of games is a good example. There are lively little games

[25] J. Lindworsky, *The Training of the Will* (The Bruce Publishing Company, 1929), p. 207.

which can be played to fix the content of almost any subject. These employ rivalry, social pressure, spirit of play, liking for competition, group approbation, ridicule, and many other fairly strong social forces. Yet very few teachers know the possibilities of games in their own subjects. One very good teacher of French made excellent use of games in the field of language to teach a well-known athlete French verbs. This boy had no interest in French as a medium of expression. So the teacher devised a game of French baseball. Failure to get the correct form of a given verb was one strike. Three strikes put the batter out. With a response which is so naïve and simple as to be almost incredible, the boy studied very hard upon his language to avoid being struck out in the game. Of course, the situation was complicated by ridicule of his fellow students when he struck out. The aversion to striking out was so strongly ingrained and the response so thoroughly conditioned that even in a comparatively artificial set-up the lad preferred studying to being struck out.

The possibility for the enriched teaching of the various high school subjects is a fruitful source of movitation. Careful students of special methods in the several subjects have furnished us with a wealth of material on their teaching. The series by Woodring and others on the enriched teaching of English, mathematics, science, commercial subjects, physical education, and Latin is a very good illustration of this point.[26] In practically all school subjects something of merit has been done along these lines. The studies in modern language teaching comprised in the publications of the American and Canadian Committees on Modern Languages con-

[26] M. N. Woodring and F. E. Sabin, *Enriched Teaching of Latin in the High School* (Bureau of Publications, Teachers College, Columbia University, 1930).

stitute another excellent example of the possibilities of detailed attention to method in a certain subject.[27]

The proper motivation of curricular pursuits presents two major phases or problems. The first is the reënforcement or strengthening of tendencies which are progressing in a correct direction. The second is what might be termed negative motivation or inhibition of undesirable reaction tendencies or reconditioning with final reënforcement of the newly directed response. Recent experimentation upon the potency of certain incentives when acquired under actual schoolroom conditions has shown that many of the commonly employed devices are of small avail in stimulating work. Warden and Cohen have made such a study. They tested stories, games, praise, reproof, delayed play, and other types of incentive. The results showed very little advantage for so-called motivated activity. In some functions there was a slight tendency for motivation to increase accuracy although this was frequently done at the expense of speed.[28] The conclusions to be argued from these findings are not that use of incentives or motivating devices is valueless, but that the manner of application is poor. Particularly in the matter of reconditioning have faulty techniques prevailed. There are three methods by which an undesirable response may be altered or partially obliterated. First, the threshold of response may be artificially raised by forced repetition. A certain teacher was troubled by a boy who insisted upon shooting rubber bands at other students. The teacher secured a large box of the bands, kept

[27] *Studies in Modern Language Teaching,* reports prepared for the Modern Foreign Language Study and the Canadian Committee on Modern Languages (The Macmillan Company, 1930).

[28] C. J. Warden and A. Cohen, "A Study of Certain Incentives Applied Under Schoolroom Conditions" (*Journal of Genetic Psychology,* Volume XXXIX, No. 3), September, 1931, pp. 320–327.

the boy after school and supervised him for an hour and a half in the shooting of the boxful of bands. He lost interest in that type of activity. Although sometimes costly in time, this procedure is a rather effective one in some cases. The same thing is seen in the eating of sweets. Many individuals who have had a liking for candy previous to going to work in a candy factory have had the tendency to eat candy blocked out by an exhaustion of the act. Boredom arising from repetition, fatigue resulting from partial exhaustion, chemical effects as in the case of the candy eating, all conspire to make the original act highly obnoxious. Unfortunately, this principle sometimes works the opposite from what is expected. Boresome drill, a petulant teacher, material which is too difficult, and many other similar factors make content which is highly desirable from the standpoint of its usefulness seem distasteful to the student. In some schoolrooms it almost seems that the undesirable are being consciously motivated and the desirable neglected. Second, there is the placing in competition with the undesirable response of a stimulus which is naturally pleasing or attractive to the learner. Watson, for example, reconditioned a baby's fear of furry objects by introducing a chocolate into the situation. Chocolate exerted a stronger pull upon the child's attention than the rabbit, and the fear was submerged in the pleasant reaction to the sweet.[29]

A third commonly used type of reconditioning is the attaching of an undesirable effect to an undesirable response. Ordinary punishment is included. This is psychologically sound but subject to certain dangers for the teacher. One danger is that the teacher may become the object to which a

[29] J. B. Watson, "Conditioning of Emotions," in *Psychologies of 1925*, Carl Murchison, editor (Clark University Press).

high threshold of response and aversion is developed in place of the act or the object to be avoided. For example, there was a certain woman in a large school system whose teaching of language was unquestionably excellent. This teacher, however, was growing increasingly unpopular with students. Her principal became worried and investigated the case. He found that the teacher, though strict, was very just. Rather than punish students in the heat of irritation, her usual practice was to postpone punishment for class delinquency for three or four days or a week. From the standpoint of a desire to be impersonal, this was a highly commendable practice. Psychologically, in terms of conditioning, it was unsound. For with the lapse of time the offense and all connected with it became comparatively dim in the mind of the pupil. The aversion which should have attached to the performance of the act had become associated with the person doing the punishing. Every time a student was penalized, therefore, resentment was piling up against the teacher rather than aversion to the activities for which the punishment was being given. Certain general rules should be observed in attempting the method of reconditioning by the attaching of annoyers to undesirable responses. First, the annoyance should follow rather soon upon the act which is to be eliminated. Second, the annoying situation should bear some logical connection to the offense. It is more likely to be remembered than the offense. When the punishment is remembered it should recall the offense, and the chances of this being the case are increased when they are logically related. Third, the reconditioning stimuli should come as the invariable result or consequence of the conduct to be altered. Formulation of rules and failure to enforce the same is very poor psychology. Fourth, punishment should be impersonal. At no time should

the teacher jeopardize her own standing with the class and minimize the effectiveness of her teaching by allowing a resentment which is directed at punishment or annoyances to become attached to herself. When the above limitations are borne in mind, this type of reconditioning may be used effectively.

The Measurement of Motivation

There does not exist at present an adequately accurate technique for the measurement of the effectiveness of motivating procedures. In cases where some general increase in motivation has taken place as in the change of attitude of a whole class toward a subject, informal inspection is sufficient. There is needed, however, further experimentation of the comparative value of the various motivating devices in actual classroom situations. The studies by Warden and Cohen, and Hurlock which have been cited constitute the type of work which, in the long run, may objectify motivating techniques. Some significant work has been done in the measurement of interests. Fryer has treated the problem of interest measurement in its relation to the more general aspects of human adjustment.[30] He gives a wealth of detail in his discussion and describes many specific methods of interest inventory. He regards interests as feelings of pleasantness or unpleasantness which vary in intensity. Furthermore, interests are more than static entities of feeling-tone. They represent a succession of pleasant or unpleasant experiences. Fryer regards motivation or drive as being residual in the sequence.

[30] Douglas Fryer, *The Measurement of Interests* (Henry Holt and Company, 1931), p. 462.

For the most part, measures of motivation and interest are subjective ratings. As such, they are subject to the usual inaccuracies and inadequacies of the introspective method. Even the association tests which may be used to catalogue strata of reaction patterns within the individual depend for their value upon a candid response. Properly taken, a battery of interest and personality tests may give a useful body of information concerning an individual.

Thurstone, who has contributed many novel and valuable ideas to literature upon this subject, has suggested recently that, granting a few "plausible psychological postulates," it is possible to reduce such a trait as the "indifference function" to experimental treatment.[31] He concerns himself only with commodities which show an increase in satisfaction when enjoyed. He further assumes that satisfaction mounts with an increase in the commodity and has constructed a curve based upon this assumption. Among his psychological postulates are three directly concerned with motivation. The first is that the quantitative definition of motivation is in terms of expected increases in satisfaction per unit increase in the commodity. This increment is expressed in terms of the discriminal error and enables one to compare an individual's motivation toward varying objects in quantitative terms. There is implied the principle that the greater the amount possessed the less the drive to acquire more. Second, when zero represents satisfaction, motivation is finite. Third, an inverse ratio obtains between motivation resulting and motivation already possessed. Working upon these postulates, Thurstone clarifies the nature and measurement of motivation. It is in work of this sort that there will be found clues

[31] L. L. Thurstone, "The Indifference Function," *Journal of Social Psychology*, II (1931), 139–167.

for the development of a final and scientific technique of measurement of motivation.

In summarizing the work on the psychology of motivation from the experimental standpoint, reference should be made to an excellent résumé by Diserens and Vaughn.[32] In this summary, it is pointed out that the experimental approach to the psychology of human motivation has been an actual continuation of earlier work on animals done by research workers in the field of comparative psychology. Herewith are cited some of the phases of investigation and partial conclusions:

1. Effect of punishment on motivated conduct. Punishment or an unsatisfying state of affairs attached to a response which is inaccurate or incorrect seems to have the general effect of speeding up the action, providing the punishment is not severe enough to disrupt accuracy of performance entirely. Thus, in classroom procedure punitive measures may serve to speed up work or make for more efficiency if they are not so excessive as to demoralize effort. Particularly in the lower grades and with individuals of a certain temperamental set the possibility of producing an emotional disturbance which will result in total loss of efficiency is great.

2. Reward. Rewards are commonly used methods of securing reënforced action both in and out of school. In the industrial field, prize contests are an example of the use of rewards to secure motivation. This type of motivation is seen in a multitude of different devices, but the experimental background for the exact effectiveness of the various types of reward is lacking.[33]

[32] Charles M. Diserens and James Vaughn, "The Experimental Psychology of Motivation," *Psychological Bulletin,* XXVIII (1931), 15-65.
[33] *Ibid.,* p. 40.

3. Facilitation and inhibition as motivation. Diserens and Vaughn point out that, although not directly motivating factors, facilitation and inhibition indirectly serve as such. The example given is that of music which tends to delay fatigue, accelerate activity, and otherwise increase body dynamics.

4. Attitude. Although beset with many technical difficulties, experimentation on the effect of attitude on efficiency and motivated action indicates that favorable attitudes, attitudes of determination, confidence, and so forth produce better performance.

5. Suggestion. Suggestions may serve either as facilitating or inhibiting forces in motivated conduct.

6. Knowledge of results. Considerable work has been done upon this phase of motivation. Conclusions indicate that, in general, knowledge of results secures better performance. This differs, however, with the type of activity being investigated. Intelligence seems to be a factor in the extent to which knowledge of results serves as a motivating element.

7. Social motives. These may be classified as:

(a) Effect of groups in general
(b) Effect of audiences
(c) Competition
(d) Praise and blame
(e) Deliberate distraction

More consistency of results is found in social factors as motivating influences than in most other phases of the subject. Praise and blame particularly are regarded as effective and controllable social forces of motivation.

In concluding their exhaustive survey of the experimental work on motivation, Diserens and Vaughn make the following summary:

1. Complexity and level of development influence the

number of variables operating in motivated situations, complicating the experimental procedure accordingly.

2. Motivating energy is proportional to the primitive nature of its source.

3. An inverse relationship exists between the intelligence level of the organism being motivated and the extent to which the motivating forces are unified.

4. Actual effectiveness of a given motivating force depends upon the consistency of the contributory elements.

It is likely that even with improved technique of experimentation, accurate measurement of the results of motivation will never be available. Particularly in cases where measurement of results depends upon prolonged observation will such measurement be difficult. Practical experimental procedure must confine its investigation of outcomes to those which are comparatively immediate, and, in cases where motivation results in a permanent set or attitude, delay of measurement is necessary to evaluate the actual worth of the motivation. In the field of character development, for example, as well as in the case of personality development the factors involved, if not actually intangible, are so delayed in making their effective appearance as a later emergent that immediate programs of measurement fail entirely to detect changes. From the standpoint of practical schoolroom procedure it is of value to know the comparative effectiveness of various types of motivating devices in order that they may be used to improve teaching.

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CHAPTER V

SOCIALIZATION AS INDIVIDUAL DEVELOPMENT

Individual Development as a Social Problem

Every child begins life as an egoist. The world is his world. As far as his experiencing carries him, the external world moves with himself, and his complaints against it, his cries and revolts, bring temporary adjustments to it. His individuality, as apart from his outer world, is unformed; selfhood and the not-self have yet to be distinguished. Selfhood develops gradually in response to contacts with the external world and in part through the child's own biological maturing.

Broadening selfhood develops mainly under two conditions. First, social interactions must be provided with persons or groups of persons outside his sphere of domination; and, second, the problems of adjustment for the child must be within his own range of competence in solving them. As long as the child's world takes its cues from himself, his own juvenile controls of the world are adequate, and the first condition of broadening selfhood is absent. Strictly egoistic beck and call become more dominant, and the limits of the child's dominion extend only as his egoistic demands increase. He is trained only to expand his juvenile, egoistic desires. The extreme is reached, on the side of an overhospitable universe, when his benevolent servants anticipate the onset of his desires and provide a surfeit of good things, thus making needless even his own domineering commands.

The young master of a universe is then trained to look upon society and nature as his docile but not too discerning slaves —not too discerning, because they fail to make certain nice adjustments to his impatient and expanding egoism. When the child's world thwarts his desires by obstacles which he can not pass, his juvenile controls are grossly inadequate, and the second condition of broadening selfhood is absent. His beck and call are futile and recessive, and the limits of the child's zone of safety diminish as external encroachments bring defeat on every side. In contrast with the young master of a universe, this cringing worm is trained to look upon society and nature as unfriendly rulers. Baffled by his world, he becomes, like the inept pupils of Alpert's group cited in Chapter III, sullen and defeated. Under such conditions, he may, instead, become rebellious. In both extremes, juvenile, rather than maturing, responses are cultivated.

The first condition of broadening selfhood demands a gradual, sympathetic induction into an expanding social world.[1] Such an induction into new social areas leads the child away from his strictly egoistic interests to interests in a broadening world. His first contacts will be within his own nursery. Here, wise parents and attendants will make increasing demands upon him. Here, he may meet other persons in the most favorable manner. The sustaining protection of his intimates will guard him against another egoistic tendency—timidity. Other children will be welcome, and their desires as well as his own will be considered. He may visit the homes of children whose attendants are also wise. In these new surroundings, he will find variants from his own patterns of conduct, and to these variants he will react. If properly in-

[1] Kurt Lewin, in Carl Murchison's *Handbook of Child Psychology* (Clark University Press, 1931), pp. 120ff.

ducted, he may observe first that other children find satisfaction in responses new to himself, and, then, changing from empathic observation, he may respond overtly to new conditions of play. If toys are present, he may ruthlessly adopt them as his own, only to discover that another child wishes to exert proprietary rights. Many similar experiences with their obvious conditioning effects continue to increase the child's social competence. New forms of play, new acquaintances, and new settings for his activity enrich the child's life. His experiences with them show him new values and expand his world beyond the confines of either an enervating or a repressing environment. Egoistic, juvenile responses are expanded and modified, and selfhood recognizes the conditions of what is not self.

The second condition of broadening selfhood demands a gradation of social problems, just as development in music, mathematics, or any other subject demands a gradation of its problems. As all socially intelligent parents and teachers have observed, children face severe handicaps in solving social problems. Social reactions are often forced by commands for which no reason is patent to the child. In many homes and schools, the children's part is not to reason why in such instances, but to obey. Children observe the social paradox between these arbitrary commands to which are attached penalties for disobedience and the demands which are made upon their elders who scoff at possible penalties. Parents and teachers, in general, have only recently discovered the difficulty of the problem of this common paradox. In the past, as at the present time, adults have flouted laws and regulations, but only recently have they appraised children's acts as they hope their own misconduct to be appraised by legal superiors or others. They now recognize the fact that chil-

dren, like themselves, are right, *i. e.* natural, in their sequences of acts. When they attempt to prepare children for social responses as they themselves have to be prepared for their own adult social responses, they discover one of the major tasks of an educator. This discovery baffles many adults, and they either revert to the severity of past generations or assume toward children an overgenerous tolerance which is their own evasive solution of adult social problems. Between these extremes lies analysis, experimentation, and the development of the new social education, which neither shields the child nor overwhelms him, but, instead, makes him reason why and act upon his highest possible level.

Behind social acts lies motivation. The preceding chapter has indicated that many motives may prompt an act. The analysis of an activity often discloses the motivation. Misconduct in the form of telling falsehoods, for instance, is often trained by fears of consequences if the truth is told. The motivation in this case is clear, and the background for it is laid when an elder person attempts to prevent misconduct by prescribing a penalty for it. The motivation is enhanced when the misconduct is condoned and when no counsel is given about future falsehoods. Although the gradient of the child's social problems has been obviously too steep, the means for the prevention of recurrences are not obvious. In general, one may say that the individual develops socially by meeting appropriate problems successfully. This principle enjoins the teacher to know children and to adapt environment to their needs. The discussions in later chapters may be anticipated by stating that the child who tells falsehoods as well as the parent or teacher whose threats stimulated the motivation must arrive at a mutual understanding. Such a boy once used his diamond ring to carve his initials on the glass of a

new door in a school building. When he found that his act carried with it, not expulsion, but only the natural economic consequences of his destruction, he changed his statement to straightforward honesty. Confidence in his confessor was necessary, and the boy had to rise to a stratum of frankness about his own wrong. He, himself, had to become willing to assume consequences and to make restitution to his school.[2] Like the physician, the parent and the teacher may prevent certain ills, but when ills arise they must likewise diagnose and rehabilitate; and, like the coöperative patient, the child must be induced to assume his responsibility in future instances.

This introductory section has indicated some of the issues involved in the rise from juvenile social patterns to the complicated patterns of adult life. It has been implied that very young children may follow either simple or complex patterns, and that normal, healthy children react socially just as they react in any other way. Children change from one social pattern to another just as they rise from the fundamentals of arithmetic to those of algebra. As pupils in mathematics often have pronounced weaknesses, so, in social development, pupils and adults often carry certain juvenile reaction patterns, such as whining, pettiness, and outbursts of anger, alongside high proficiency in many matters of common decency. As social patterns are formed by individuals and as the activities within

[2] Unpublished lectures of Franklin W. Johnson. See also President Johnson's *The Administration and Supervision of the High School* (Ginn and Company, 1925), pp. 185–187. Case studies of delinquency and their treatment are numerous in such works as Clifford R. Shaw's *The Jack Roller: A Delinquent Boy's Own Story* (University of Chicago Press, 1930); Frederic M. Thrasher's *The Gang: A Study of 1313 Gangs in Chicago* (University of Chicago Press, 1927); and Ben B. Lindsey and Rube Borough's *The Dangerous Life* (Horace Liveright, 1931).

any pattern are the activities of individuals, it is clear that social patterns are not level plains, but that they are, instead, as bewilderingly faulted as the Rocky Mountains.

Characteristics of Social Groups

A social group is composed of persons held together by a common motive or by common motives. No individual lives apart from a group, and no social group is unaffected by its members. The separation of an individual from a group or the discussion of a group apart from its members is artificial, but emphasis may be now on the individual and again on the group. The saying, "Each for all and all for each," is, therefore, a statement of a necessary condition and not of an ideal, save as it looks toward an improvement of coöperation within a group or within groups. As all persons are actuated by more than one motive or set of motives, each person is likely to be allied with more than one social group.

Within each group, there are interactions among its members. Large and relatively undifferentiated groups often include many smaller groups. One large group of persons is held together loosely through baseball, another through interest in motion pictures, and another through academic interests. These groups, like clubs, lodges, churches, and automobile associations, may include many members in common whose additional extragroup alliances may be more intimate and more highly motivated than any of the larger group memberships just named. A man's interest in an economic group, as a citrus-growers' or lumbermen's association, may, indeed, motivate many other alliances which are believed to be valuable for his economic welfare. As stated in Chapter IV, such a man, like all others who enter many

groups, carries to each organization the motivations and the effects of all the groups to which he belongs.

Common group responses characterize all social unions. Crowds at theatres laugh and cry together,[3] although E. A. Bishop found that, at different hours of day and evening, such responses are of different duration and intensity.[4] The members of so undifferentiated a crowd are unlike, however, in their responses to the supplementary features of a motion picture theatre. Music of the day often draws forth noisy applause, while standard selections often elicit an undertone of disapproval. Similarly, a church service is accompanied by reverential responses, a dinner club has its hilarity or deliberation according to the motives of its members, and a concert leads to æsthetic experiencing. Persons who are unwilling, at times or habitually, to make the customary responses of the group are annoyed, and so are conditioned against the group as a whole; and other members of the group, in turn, regard such persons as undesirable brothers in that particular group. In academic groups, similar conditions exist. But there is this important difference in academic groups: the members of the group are sometimes allied from different motives than the pleasure-seeking crowd at a theatre, the reverential audience at church, or the profit seekers at a sales conference. Pupils may enter a literature class because they have to do so, and the teacher's motive of literary appraisal or of æsthetic experiencing may be directly opposed to the pupils' motives of obtaining credits, of continuing a reverie, or of conversing among themselves. Only after the teacher as leader arouses a common motive in the

[3] *Cf.* Gardner Murphy and Lois B. Murphy, *Experimental Social Psychology* (Harper and Brothers, 1931), pp. 499–501.

[4] Unpublished study.

real purpose of the classroom activity, can such a group be described as an academic social group which will yield a desirable common response.

In saying that a common motive is desirable in a classroom, one does not necessarily imply that no conflicting motives should also exist. As indicated in the preceding chapter, conflict and thwarting, when systematic and balanced, may reënforce a desirable form of motivation. Individual thinking in such a group is sometimes swayed in the direction of a conflicting view; at other times a view already held is intensified by another person's attempt to dislodge or override it by a conflicting view. A variety of conditions enters into the determination of the effects of group discussions. If the discussion is about highly emotionalized attitudes, if objective data are relatively scarce, and if the members of the group—leaders as well as followers—are intolerant of conflicting opinions on even minor issues, existing views are likely to be unaltered except by intensification. If any of these conditions is replaced by its opposite, modification of views or the adoption of a common view is likely to follow. Frankness and tolerance in discussing economic, social, and religious questions reduce harsh animosities, and the conclusion of investigations of interactions within a group is that specific problems can be effectively discussed by specific groups.[5] As this point is significant for the treatment of all the controversial issues which arise in schools, teachers should provide the conditions of effective discussion and avoid topics for which such conditions can not be provided.

Favorable conditions for the discussion of conflicting views are suggested in the citation just given of Murphy and Murphy. First, there must be a recognition that every one's

[5] Murphy and Murphy, *op. cit.*, pp. 547–557.

views have been arrived at in fundamentally similar ways and are, therefore, to be respected even though challenged—it will be clear, of course, that some persons will have accepted views unquestioningly and will have adopted or acquired myths, superstitions, prejudices, and so on, while others will have been sheltered from authoritarian teachers and will have acquired scientific facts, and so on. Second, there must be a common agreement that the purpose of the discussion is not to violate but to promote the understanding of conflicting views and their background and implications—it should be made clear that, if adjustments are necessary, minor differences will have finally to be disregarded or compromised. Third, inescapable objective evidences, if available, should be presented as fully as possible by all sides—it will be recognized that so objective a datum as a dying man will be variously interpreted and that there are, therefore, limits beyond which agreement can not be reached. Fourth, a favorable order of broaching the issues in controversy and an appropriate presentation of each issue are necessary—intensification of the conflict is likely to follow a failure to divide difficulties or an attempt to settle major difficulties at the outset. The use of harshness, sarcasm, etc. will also intensify differences. Fifth, there must be effective leadership. The leader must recognize such matters as an impasse and that certain notions require time for acceptance or maturation, he must see relationships or possibilities among divergent views, and he must be able to present solutions effectively, stopping short of too drastic a compromise. Sixth, there must be a willingness of the members of group to recognize their own possible fallibility and that such fallibility may be due to fundamentally wrong conditioning, and still further to see that other views, whether acceptable or not, may still be logi-

cally held, if a given interpretation is adopted at any stage in an opponent's reasoning.

When such or other possible conditions exist, conflict within a group may not only be allowed, but it may even bind the group together and motivate learning. "Group thinking" under such conditions, like the reading of books which present divergent views, stimulates inquiry and analysis, and it broadens the views of its participants. The desire of the individuals of the group to improve social adjustment provides the common motive for the group. In terms of the mental functions described in Chapter III, the crisis presented by the conflict contributes particularly to problem solving, the acquisition of knowledge, and social competence. In the development of social competence, the conditioning of pupils to profit by group interactions is of great importance. They obtain in this way the socially desirable satisfaction rather than the defeats and socially undesirable dissatisfaction of competition. A narrow, juvenile, egoistic self, with its attendant social and individual dangers of repressive fantasies or violent domineering, gives way in this intelligent competition to interactions which produce the qualities of a broadened, judicially-minded, socialized self. As a learning situation, the conflicting group provides an impelling and possible problem, instead of a problem which may be neutral or even impossible to the pupils. In a classroom, the teacher or books may, of course, provide the desirable conflicting situation, which may be conducted according to the six principles of group discussion.

Willingness to accept the views or judgments of others, instead of conflict, characterizes many social groups. Indeed, an unwillingness to form and maintain an independent judgment sometimes descends to the point of extreme gullibility. An instance of this is the "ability" of nearly twice as high

a percentage of students in a large classroom to detect in various parts of the room, the odor of water in a bottle uncorked in the front of the room, as when the water was presented to the students individually.[6] The position of individuals in a stationary group, as in a classroom, illustrates further this characteristic. In such cases, the center of the group seems to be more conducive to the acceptance of either group enthusiasm or the teaching of a classroom instructor.[7] When judgments are sought from individuals in a group upon either objective matters, such as the weights of iron balls, or upon subjective matters, such as morality or artistry, a significant interaction among individuals is found.[8] If individuals possess standards of judgments which have been carefully cultivated, their judgments upon matters to which these standards can be applied, as in art or morality, are, of course, less affected by other persons than are the judgments of naïve individuals.

The psychology of group characteristics must, therefore, include analyses of each individual as a unit and of the patterns of social interactions which operate upon each individual as a member of a group. Such analyses indicate that certain activities or tasks are best promoted when individuals are in groups and others when individuals are working alone. When each member of a group contributes items, as the correct sums of a series of numbers, the total work of the group is the total number of additions performed. Here, the group achievement is obviously greater than that of any member of the group, and it may be greater than it would have been if each member had worked in complete isolation from the

[6] H. Clark, *The Crowd, Psychological Monographs,* Vol. 21, No. 92, 1916, pp. 26–36. The percentages were 19 and 10, respectively.

[7] Murphy and Murphy, *op. cit.,* p. 511.

[8] *Ibid.,* pp. 512ff.

group. When the minority of a group contributes all the valuable suggestions for the solution of a relatively complex problem, as in originals in geometry or in literary interpretation, the total achievement for the group is the total product of only this small and intellectually homogeneous group; the majority may either stimulate or interfere with the minority and may, of course, be either improved or retarded by witnessing the activity of their more brilliant comrades. Here, as in simple group addition of the series of numbers, the able members may make contributions which can be added together to form the total group achievement. Reference to the steps in problem solving (pp. 81–82) shows, however, that the likelihood of each member's contributing a correct or acceptable suggestion is dependent upon a complex situation which is absent from the simple addition of numbers. In this more complex process each contribution must be evaluated in view of an entire, complex situation. Each member needs to think through the problem. An irrelevant or wrong suggestion or an untimely interruption is a distraction. The individual as a unit is important here, and his characteristics influence his achievement as a group member. Among significant characteristics in this respect are his tendency to be coöperative, willingness to accept and adapt contributions from others and to offer contributions for others to use, attitude toward conflict, customary responses to the presence of persons who are liked or disliked, and satisfaction from achievement before a group. Unless initially present, each of these significant characteristics must be cultivated. The six conditions of successful group discussion stated above provide such training during group activity. The social value of this training may compensate in part for possible individual losses of effectiveness during early coöperative activity. It is

possible that, by expert training, all individuals can acquire ability to work better in groups than in isolation.[9] It is not to be inferred, however, that group study should supplant all individual study, especially in the perfecting of work initiated in the group. But the thesis of this section is that all six of the mental functions can operate successfully in coöperative group activity, if teachers, as leaders, understand the characteristics of social groups and are skillful in providing the conditions of effective group interactions.

As the members of a group ally themselves from a common motive, their responses are, of course, similar to the extent that the individuals were initially alike and have had the same background and to the extent that additional conflicting motives do not exist. The usual complexity of a group pattern of conduct is due largely to the fact that individuals are initially somewhat unlike and have somewhat different backgrounds and also belong to more than one group. Every family, neighborhood, church, and party has its system of values, and, consequently, it conditions its members according to its motivation-response patterns. In each family the affairs of life are reviewed, judgments are exchanged, and the members of this small group not only understand one another, but they also respond similarly to certain stimuli.

The values of one's early group alliances are often accepted as unquestioned facts of life, and such values are often highly intensified by emotion. In this way thorough conditioning takes place during complacent acceptance. The

[9] *Cf.* W. L. Uhl, *The Supervision of Secondary Subjects* (D. Appleton and Company, 1929), pp. 260ff. and 290ff. for accounts of the use of coöperative group activity in composition and literature classes. For discussions of similar procedures in music and health learning, respectively, see articles by Violet Hammond and Margaret Duiven in *Educational Method* XI, 104–111 (November, 1931).

values accepted by members of other groups are treated as absurd delusions, and persons who hold conflicting views are regarded with a combination of pity and intolerance. Such a condition often exists in a neighborhood which is predominantly either Catholic or Protestant, either autocratic or democratic, or in which citizens are adherents of either the Democratic or the Republican party. As an example, the late imperial party of Russia regarded the revolutionists as drunken bolsheviks, while the revolutionists were certain that the autocrats were cruel, unfeeling tyrants.[10] The correlation of knowledge about objective facts and certainty about facts in such conditions is sometimes low. Certainty seems to be acquired under the protected and highly emotionalized group influence, while knowledge comes from study in the problem-solving, suspended-judgment type of situation.[11] When children's development occurs under narrow intolerant group influences, their social attitudes are likely to be based upon values which are slightly understood but strongly colored by emotion. Conflicting views can then be studied objectively only with great difficulty, and, consequently, the six conditions described above must be present if children are to be raised from their slough of complacency and progress is to be made.

Certain children with a bent for "toughmindedness" sometimes question the policy of complacent acceptance and begin early in life to develop a personal immunization to smugness. The family may, in such cases, serve as teachers and foster a critical attitude. Such children's incipient social competence is recognized by the school, and it forms a basis for

[10] *Cf.* Gleb Botkin, *The Real Romanovs* (Fleming H. Revell, 1931).
[11] *Cf.* Harold S. Carlson, *Information and Certainty in Political Opinions: A Study of University Students During a Campaign,* Iowa Studies in Character, Vol. IV, No. 1 (University of Iowa, 1931).

the intelligent examination of controversial issues by group discussions in the school. An illuminating personal account of such interactions has been given by Wesley C. Mitchell.[12] In this case, the family background of interactions included intermittent discussions of theology. Dr. Mitchell's early "impish delight in dressing up logical difficulties" which could not be tossed aside developed into his more mature speculations upon philosophical and economic theories with Dewey and Marshall. One may reasonably assume that Mitchell, as a schoolboy, was a torment to all his complacent teachers and an inspiration to his intelligent teachers. Favorable conditioning of this kind has a counterpart also in the unfavorable conditioning of boys who become members of criminalistic gangs. Gang activities, as games, reading demoralizing stories, loafing, stealing, vandalism, and so on, lead to fantasies and overt acts upon similar patterns.[13] Young gangsters need leadership, of course, in both discussion and highly motivated, general group activities on the play level as substitutes for their unsocial gang conditioning. The village or neighborhood life leaves its imprint in similar ways. The prejudices, narrowness, intolerance, and ignorance of a village of self-righteous gossip-mongers have their counterpart in the science, broad vicarious experiencing, and tolerance of a village or city in which children are directed in progressive rather than arrested or thwarted development.[14] In all these cases, socially sanctioned reactions are practiced by individuals until thoroughly learned. These

[12] Stuart A. Rice, *Methods in Social Science* (University of Chicago Press, 1931), pp. 673–680.

[13] *Cf.* Frederic M. Thrasher, *op. cit.*

[14] *Cf.* Jesse F. Steiner, *The American Community in Action: Case Studies of American Communities* (Henry Holt and Company, 1928).

learned reactions or patterns predispose children for or against further progressive conduct. For this reason a pupil's background of home, community, or gang life is often more important in education than the stimuli which are presented by the school.[15] In terms of what is called general intelligence, the effects of the removal of a very young child from an environment of narrowness, emptiness, and superstition to one of breadth, fullness, and intelligence seems to lead to an increase in I. Q. from 10 to 20 points.[16] In the case of persons whose social patterns are well formulated, though in part inappropriate, there is a grave danger of a social breakdown, if new views and practices are accepted without painstaking direction. The older patterns and values with their strong social controls are swept away before new attitudes and activities are developed. Such cases are often found in college students whose early training is suddenly upset by a partial understanding of new, even though more desirable, views. In general social life this upset, which amounts to deterioration, is found when older practices are discredited, and the superficial attractions of a new way living are accepted. Such instances have been analyzed by Thomas and Znaniecki

[15] See also the prevalence and tenacity of prejudices and superstitions as shown by G. E. Lundeen and O. W. Caldwell, "A Study of Unfounded Beliefs among High-School Seniors," *Journal of Educational Research,* XXII, 257–273 (November, 1930); and F. F. Powers, "The Influence of Intelligence and Personality Traits Upon False Beliefs" (*Journal of Social Psychology,* 1931), pp. 490–493.

[16] Rudolf Pintner, in Carl Murchison's *Foundations of Experimental Psychology* (Clark University Press, 1929), p. 696. See also the Twenty-Seventh *Yearbook* of the National Society for the Study of Education, Part I (Public School Publishing Company, 1928): Frank N. Freeman, pp. 210f. and Barbara S. Burks, pp. 317ff. For an account of "The Experimental Construction of an Environment Optimal for Mental Growth" in the elementary school, see Susan Isaacs in Carl Murchison's *Handbook of Child Psychology* (Clark University Press, 1931), pp. 128–157.

in their analysis of the undirected Americanization of immigrants.[17]

The cases reviewed in this section show clearly that misdirection or a lack of intelligent direction produces social instability, while the intelligent study of social and scientific problems leads to individual progress in social adjustment. The effects of a generation of intelligent teaching can be achieved only after teachers themselves have been trained as leaders in social and scientific development and have been allowed to substitute desirable, progressive views and practices in the children of the nation. Only in this way can the faith of our fathers of church and state be carried forward as they themselves carried forward their own program of faith in intelligent group leadership and an enlightened citizenry. American teachers who adopt this program should also school themselves in such techniques of group leadership as their fathers displayed during the critical years of the making of our Constitution.[18] Our study of the characteristics of social groups has shown also that individual development in socialization through discussions depends upon six conditions: (1) respectful consideration of the values and attitudes of all members of the group; (2) a desire to promote a common understanding; (3) the weighing of evidence on social questions; (4) the tactful broaching and discussing of social issues; (5) effective leadership; and (6) a willingness to admit the fallibility of one's social attitudes and intelligently to adopt new attitudes. The importance of a wide variety of curricular and extracurricular activities, other

[17] *The Polish Peasant in Europe and America,* 2 vols. (Alfred A. Knopf, Inc., 1927). First published in 5 vols. by Richard Badger, 1918.

[18] See *Journal of Educational Method,* Vol. VIII, No. 3, March, 1931, entire. Also articles by W. H. Kilpatrick, Harold Rugg, Goodwin Watson, and William Boyd in the same journal, April, 1931.

than discussions, in providing common motives for groups is also recognized. A hospitable attitude among the members of a social group is engendered in and promoted by these activities, and so they are often fully as important educationally as the discussion method in group life.

Individual Adaptations to Different Patterns of Conduct

Individuals can be divided roughly into two groups—those who adapt themselves to one pattern of conduct or set of conventions, and those who adapt themselves to many patterns. Membership in the first or the second of these two groups is sometimes referred to as dependent upon one's intelligence. Social versatility may also be attributed to normal development in a rich social environment. The versatile member of the second group obviously knows many sets of conventions, and sometimes he is accorded honor by a variety of individuals of diverse interests. His social competence in each of many groups may be unquestioned. For these reasons, his intelligence may be admired or even envied. This person's versatility may be due, however, to his vacillating tendencies, he may lack definite convictions and knowledge, or he may weakly escape at times from a social group of a high order to find vain relief from the rigorous intellectual demands of more competent members of that distinguished group. He may be sought as a valuable leader by the members of different groups, or he may seek the adulations and the possibilities of exploitation of relatively weak groups. Individuals who follow one pattern of conduct mainly and, therefore, restrict their social life almost exclusively to one group are not always unskilled in or ignorant of the conventions of other

groups. They are sometimes persons of ability who sacrifice the pleasures of broad social life for the accomplishment of worthy purposes and who decline abandonment of time and energy to what seems unworthy. They may be either fanatics or scientists. They may, therefore, be either unable to move in different groups on account of their own incapacity, or unwilling to acquire and practice a conventional sham on account of their own deep understanding of life. This section treats problems such as these as issues in individual and social development.

The thesis of the first section of this chapter is that every child begins life with a narrow range of interests and responses and, as a result of conduct in varied situations, acquires patterns of behavior which indicate his social competence. If he responds intelligently to but few types of social situations, he is restricted in his own individual development, and, conversely, if he responds intelligently to many types of social situations, he provides for himself broad individual development. If, therefore, individual development in social competence is desired for all children, schools should coöperate with other socializing institutions and induct pupils into as many forms of social life as individual capacities will permit. If this kind of development is neglected, certain children will follow their juvenile, egoistic tendencies and be progressively unfit socially as their fellow pupils and other possible companions progress in social competence. In a highly stratified and geographically static society, this form of neglect is less serious than it is in a migrating democracy like that of America. As a result of this seriousness, the schools of our nation organize definite situations to facilitate group activities, and, even in the case of brilliant egoistic pupils, the schools discount the work and other activity of those who

seek isolation. Schools stimulate, instead, a breadth of social competence which may apparently, if not actually, detract from the immediate worth of such an individual's products. This policy is not prompted solely by a desire to eradicate the unwelcome effects of a self-centered egoist upon society, but it is prompted by the conviction that a brilliant pupil will enhance his own opportunities for achievement by conduct which overcomes extreme introversion. It is an attempt to substitute for a haphazard social environment one that is systematically designed to bring out in every person the social versatility that is desirable for an individual everywhere and especially essential in a democracy.

Such training, where effective, brings about a correlative substitution. It substitutes in the individual a large group consciousness for a small group consciousness. The sheer intelligence of an individual who has had such training is not greater than that of one who has been deprived of such training. Instead, he is more competent because he has had an opportunity to learn the numerous forms of technique, the conventions, the beliefs, and the interests of the members of many social groups. When such broad social training is conducted by persons who skillfully teach coöperative activity rather than merely the skills of individual exploitation, society as well as the child is benefited. In anticipation of discussions of the technique of social learning in Parts II and III, it can be stated here that such learning is like other learning in requiring both problem solving during conflicts or crises and the acquisition of knowledge and skill. Also, in social learning, as in other departments of knowledge, there are hundreds of items to learn—conventions, facial reactions, group procedures and controls, behavior patterns, character analyses, and so on.

Individuals who adapt themselves to many groups discover many interlockings of behavior patterns, together with varying group prejudices and specialized reactions. Characteristic intimacies, punishments and personal criticisms of members within the group, combined with more or less hostile attitudes and treatment of outsiders, are, as examples, usually present. Newcomers in a social group are both chastened and welcomed, and they are likely to be thoroughly tested on minor issues before being accorded confidence on major issues. The integrity of the group is jealously guarded, and individuals sedulously avoid suspicion of themselves as members of the group. In noneconomic social groups, knowledge and practice of conventions is usually essential, and the conventions of outsiders are often regarded as indications of barbarity or specious haughtiness. The versatile person must, therefore, be prepared for personal rebuffs, the practice at times of conventions which are frowned upon by his associates in certain of his own groups, the acceptance in one group of companions who may be excluded from other groups, alternating tolerance of standards and ideas when passing from group to group, and so on. He must have traveled far from his juvenile status, when the world seemed simple and moved as he, the dominating egoist, directed. Even though he continue to be a dominating member in all of his groups, he must have learned and practiced much that is foreign to most persons whose range of group membership is small. Despite the difficulties of membership in diverse groups, motivation for it of the types discussed in Chapter IV is often keen. Either a religious or a compensatory motive may, for example, drive one into certain groups for restricted purposes. Likewise, the hedonic motive may lead one to seek the pleasures of discovery or new experience in a

group which is quite out of accord with one's major interests. If, therefore, the effects of such versatility upon large group consciousness are desirable, educators can find many children responsive to the training which a variety group membership provides. Tolerance, judicial attitude, poise during conflict, and congeniality are among the desirable components of social competence which can develop in such situations. For the over-complacent conformist as well as for the menace, such training is needed. For the civic leader, it is indispensable.

The well-trained individual, though not a leader, has shortened the social distance between himself and other persons who, for his own good or that of society, should enter his life. He can speak, or, at least, he can understand, the language of more than one social group. He can adapt his conduct to the social and personal requirements of a democratic country. Directed life in social situations has refined his juvenile tendencies. Naïve impulses have given way to problem solving in conflicting social affairs. Judicial consideration leads him to weigh evidence and to adapt his own conduct to multiplex circumstances and possible consequences. He no longer depends upon crying, striking, and snatching. Covert reactions conceal feelings which, if openly expressed, would prejudice his fellows or inopportunely reveal his purposes. Yet this diplomacy, if well ordered, is used for socially desirable ends—ends that he has studied and that conform with standards acquired by individual effort in his own social adjustment. These and many other components of social competence have been learned through social experiences, as the multiplication table may have been learned through drill.

The well-trained individual, if a leader, has all these qualities of social competence. He has the highest degree of

adaptation and social stimulus value [19] in his group. In addition to adaptation, he has the power of redirecting his fellows. His dynamic qualities include facility in language, clearness in thinking, general enlightenment, fertility of suggestion, and so on.[20] In the experimental studies of leadership just cited, an individual who exhibits these dynamic qualities is quickly recognized, and he becomes the spokesman and critic of his group or committee. His training in leadership is, of course, dependent in large part upon his superior individual capacities, but the training itself teaches him to press his views only as he prepares his fellows to accept them in conflict situations [21] or to announce a peculiarly apt phrase to catch the attention of his group.[22] Instead of confining his learning to the relatively simple situations of undistracted, individual isolation, he extends it to the relatively complex situations of distracting, slowly moving coöperative group life. In terms of motivation, he learns to temper his desire for an immediate personal solution of problems; by waiting upon his group, he achieves more fully the objects of his economic, religious, compensatory, or other types of motivation. Without disregarding the value to society as a whole, the issue in the present discussion can be stated as that of using social situations for the training of individuals. For such training, cooperative experiences are believed to be essential. The next question is, therefore, how can such individual development be most effectively attained?

[19] *Cf.* Mark A. May in Carl Murchison's *The Foundations of Experimental Psychology* (Clark University Press, 1929), pp. 766ff.

[20] *Cf.* the discussion of the coöperating group in Murphy and Murphy, *op. cit.*, pp. 519–553.

[21] *Ibid.*, pp. 552–553.

[22] *Ibid.*, pp. 524–525.

Agencies for Social Progress in the Individual

Three social agencies through which individuals develop will be presented: (1) institutions outside the school; (2) books; and (3) teachers. School life is not treated at length in this section for the reason that the major part of this book is devoted to it as a matter of course. The other three agencies are given special treatment, because they are centers or sources of much of the social living of all children.

1. Institutions outside the school. Institutions outside the school are of profound importance in the general education of children. Chief among them is the home, which may be either favorable or unfavorable for the social adjustment of children. Unsuspected causes often lead to either desirable or undesirable results in individual development. A good home for one child is not always a good home for another. Owing to individual differences among the children in a home, the home itself, despite its apparent uniformity, may influence each member of the family in a different way. Special characteristics of a child may lead to reactions in other persons, so that each child, in a sense, develops his own environment. The children, except rarely, are of different ages. One child, as Jane B.,[23] may be a disciplinary problem, because of her infantile conditioning, which, in her case, was against her mother and younger brother. Protective attention was showered upon the younger child, leaving only neglect, as the elder interprets the situation, for herself. The younger child, as the recipient of special attention, tended to continue juvenile, egoistic dominance, while the elder tended toward revolt or self-pity. In Jane's case, the baby was an object of

[23] Kimball Young, *Social Psychology* (Alfred A. Knopf, 1930), pp. 204f.

dislike, and the mother was an accomplice of the unliked person. For Jane, the household provided comfort through her father and annoyance through her mother and baby brother. For the baby brother, Jane was a disturber of peace, while the mother was a protector. Although, as Young observes, maturity and experience may correct such misfortunes, the effects often continue in sublimated forms of undesirable reconditioning.

In other homes, inanimate, physical objects become the enemies of children. The child bumps his head against a table. The mother soothes the child and strikes the offending table, and aids the child in developing an unfortunate pattern of conduct.[24] The continuance of early hostile attitudes toward inanimate objects is so prevalent that only a brief reference to it is necessary. The proverbial attitudes of the man who becomes enraged while adjusting a stove pipe, or who swears at his car when he "kills" the engine, are examples of such unintelligent controls in individuals. Similar maladjustments to animals are familiar to every one.

The pampering of children has also an extensive array of unwanted consequences. Julia X is a victim of such conditions.[25] From infancy to adulthood, egoistic luxury has taught her to avoid or shirk all severe responsibility, to whine about inconveniences, and to regard herself as a special creation and a guest in the world. This case, like the others cited and like those in which abnormal repression or rebellion is engendered, is an example of a failure in the intelligent socialization in individual development.

Differences among homes are probably as wide and as significant in child development as differences among the chil-

[24] *Ibid.*, p. 241.
[25] *Ibid.*, pp. 242f.

dren themselves. Striking illustrations of the effects of these differences are reported by home finding agencies. Children who have become delinquent as members of one home, become socially responsible when placed in another home. In some cases, the homes in which such delinquencies arise are, from many clear reasons, obviously unfit for children. In other cases, delinquencies arise or continue in homes which experts in child placement consider good, but the delinquencies are corrected in other homes which may, in general, be no better. Sixteen-year-old Irene, a delinquent orphan, was placed successively in two homes.[26] In the first of these homes, which had been used successfully by the placement agency, Irene continued to be irresponsible and despondent. In the second home, she "developed into a happy, normal individual, an interested member of the family, sharing their cares and pleasures." The descriptions of these homes indicate that, in the first, responsibilities were administered unwisely, while, in the second, they were given wisely, and a mutuality was established between the girl and her foster mother. "Praise and criticism were wisely balanced and importance given to the real issues upon which the welfare of the whole family depended. . . . (The foster mother knew) how to make every-day duties seem like a game."

Dr. Healy and his collaborators are cautious about assigning reasons for the successes of certain homes and the failures of others. The evidence which they present seems to show clearly, however, that one situation taken as a whole was unsuccessful, while another was, as a whole, successful. In some cases, a good foster home was able to correct, in a relatively short time, delinquencies which had long persisted,

[26] William Healy, *et al., Reconstructing Behavior in Youth* (Alfred A. Knopf, 1929), pp. 149ff.

and, in certain cases, children were so reconditioned that they could be returned to their own parents.[27] Characteristics which mark a well-selected home are suggested: "There is often the first opportunity which the (delinquent) child has had for gaining familiarity with family life in which harmony, serenity, courtesy, good will, fair play, and affection exist." [28] These general characteristics probably distinguish all good homes, and, when they are present, homes are, of course, desirable educational institutions.

Other institutions, as the church, the theatre, the radio, industrial and transportation organizations, minor neighborhood groups, political organizations, and philanthropic societies, merit consideration as agencies in furthering individual development through social adjustment. These institutions, together with the home, are held by certain students of education, as Hart,[29] to have been, at least in the past, of even greater importance than schools in providing training in the six functions of conduct. So great is the importance of such institutions, that many adults, in discussion groups and classes attribute to contacts with them their own most valuable training. This training, like that of the schools, has not always been constructive; instead, it has often been "particularly disintegrating and demoralizing." [30]

What the individual needs is an opportunity not only to develop in himself certain customary social patterns, but also to modify many of society's patterns intelligently. A program of individual development demands an opportunity for progressing members of each new generation, as well as for a

[27] *Ibid.*, Chapter XXI.
[28] *Ibid.*, p. 255.
[29] Joseph K. Hart, *Adult Education* (Thomas Y. Crowell Company, 1927), pp. 156ff.
[30] *Ibid.*, p. 161.

conserving society which often stumbles and which looks backward no less than forward. Such modifications will substitute an enlightened fullness of life for the repressed emptiness of unintelligent conformity. To direct this process, leaders are needed—leaders who have acquainted themselves with socializing forces and who can integrate those influences which stimulate individual growth. Such leaders will utilize the spontaneity, curiosity, and originality that characterize young children—qualities that are too often wanting in the "well-trained adult."

2. Books. Books and other printed matter aid in socialization by providing a rich, though vicarious, social experience. The conviction that books may be either harmful or helpful is shown in the attempts of reformers everywhere to suppress certain writings and to make others accessible. Underlying these attempts is a second conviction that bad books are bad associates, while good books are good associates. In opposition to these convictions, is the view of an increasing number of the intelligentsia that all books and printed matter are good—at least for certain persons and under certain conditions.

Before adopting either of these views, one should examine the philosophy of the two attitudes. First, if books are influential and the reader is likely to follow the suggestions of a writer, apparently, there can be no question about the validity of the reformer's conviction that the books which portray evil thoughts and deeds in a favorable setting should be suppressed. Second, if books are a source of varied experience, and if broad experience rather than a sheltered existence is needed, apparently, there can be no question about the validity of the conviction of the intelligentsia that books which portray any aspect of life should be circulated.

Fortunately, for the student who enjoys controversy, both of these statements can be discredited by any ordinary sophist.

After a few issues are presented, the reader will be left free to adopt either view or to modify the views according to his own wisdom. First, there is no generally accepted list of books which are either altogether good or altogether bad. Second, if a book is regarded as either good or bad in one generation or place, it is likely to be differently regarded in another generation or place. Third, books reveal conditions, and they may be instructive, even though their author's intentions may have been culpable. Fourth, the reformer or censor of books may hold views which, in the opinion of others, are unwarranted. Fifth, nearly every professedly good person has read some bad books, and he is still good—this applies preëminently to censors. Sixth, the purposes of the reader of books can be directed, especially by intelligent parents and teachers, and a critical attitude can be developed for an improved selection of books—this applies, in part, to trash as well as to the classics. Seventh, a corollary to the sixth point, books can provide vicarious experiences with a minimum of bad consequences. Eighth, the doctrine of substituting a generous supply of good activities for bad ones justifies the belief that, on a well-balanced and well-directed program of reading, good books will crowd out bad books. Ninth, after many good books have been read, the reader may be immunized against bad books—this assumption is needed by the good person who, for "professional reasons," occasionally reads bad books. Tenth, socialization, rather than repressive shelter, is the theme of this chapter, and the reading of a miscellany of books is a means of socialization.

The contributions of books to self realization, self discovery, and other social qualities depend upon the appropriate-

ness of the books for the reader. An appropriate book for these purposes portrays human nature realistically in situations which are significant because of relevance to the reader's own personal problems. The need for a variety of associates has already been discussed. The same need can be similarly defended for books. Books are, in many respects, the most convenient of associates—they can be taken up or thrown aside at any time. By portraying high ideals, by showing how people of various lands and places think and live, they increase an individual's acquaintances. If well selected, they increase the reader's knowledge of himself as well as of others and challenge him to higher levels of conduct.[31]

3. Teachers. Teachers, like parents, may be socially competent or incompetent in directing the activities of children. If they are more competent than parents, it is probably because they have acquired and maintained a better social balance and because they have higher intelligence and superior training. Their maintenance of a social balance is often alleged to be more difficult for them than for parents: they often work in a monarchical system; their views and problems are seldom given sympathetic attention; and they are discouraged from participation in many municipal activities.[32] Their lives are also restricted by the more extreme conventions of society. Added to these alleged restricting social conditions, are the tendencies of teachers to be drawn from ranks of society in which broad social training is likely to be wanting, the more or less society-imposed tendency to withdraw from certain social groups, and the tendency of

[31] *Cf.* W. H. Burnham on "Reading as an Aid to Self-Discovery" in *The Wholesome Personality* (D. Appleton and Company, 1932), pp. 600–602.

[32] *Cf.* E. L. B. Curtis, "Democracy in Education," *School and Society,* XXXV, 429–431 (March 26, 1932).

school administrators to exclude women who have exercised a fairly common human prerogative by marrying.[33]

Each of the foregoing allegations and tendencies has received the serious attention of school administrators, schools of education, parent teacher associations, and other groups. Except for the third statement of Curtis, many schools have changed. Certain school systems, as Oakland and Pasadena, have provided excellent physical and administrative facilities for teachers who have educational views and wish to put them into action. Prospective teachers and teachers in service are now encouraged in training schools and by administrators to broaden their social contacts and to participate freely in a wide range of activities. Attempts are made to impress upon them the fact that they can not be leaders of pupils without extending their interests beyond the classroom. They are trained to articulate classroom and other pupil activities with life in general, as shown more fully in Chapter V.

The foregoing recital of the position of teachers has been given to show in a fragmentary manner why children's behavior and teachers' expectations are often conflicting. If the teacher is impressed by the need to cultivate a restricted social existence, the life of the school is likely to be hemmed in by restrictions. If the teacher is unsympathetic with many of the individualistic, overt tendencies of pupils and does not know how to direct them, school life is likely to be a monotonous round of interference with the development of mentally robust children and an incubator for the docile.

What conduct is encouraged by teachers? What are teachers' attitudes toward pupils' conduct? What kinds of conduct do teachers attempt to discourage? How do teachers attempt to control or guide pupils' conduct? These questions are the

[33] *Cf.* Kimball Young, *op. cit.*, pp. 293–302 and 347–352.

topics of an investigation which has recently been reported by Wickman,[34] who obtained from teachers and from records of behavior clinics a list of fifty kinds of undesirable behavior, and, later, the judgments of 511 teachers and 31 clinicians about the seriousness of each of these forms of misbehavior. The following tabular summary of Wickman's study shows the reactions of both groups of judges to these problems.

TEACHERS' RATINGS

More Serious Than	*More Serious Than*	*More Serious Than*
Immoralities Dishonesties Transgressions against authority	Violations of: Orderliness in classroom Applications to school work	Extravagant, aggressive personality and behavior traits	Withdrawing, recessive personality and behavior traits

MENTAL CLINICIANS' RATINGS

More Serious Than	*More Serious Than*	*More Serious Than*
Withdrawing, recessive personality and behavior traits	Dishonesties Cruelty Temper tantrums Truancy	Immoralities Violations of school work requirements Extravagant behavior traits	Transgressions against authority Violations of orderliness in class

In commenting upon the almost complete reversal of the judgments with the two sets of judges, Wickman observes

[34] E. K. Wickman, *Children's Behavior and Teachers' Attitudes* (The Commonwealth Fund, Division of Publications, New York, 1929).

that "the clinicians, unlike teachers, were not laboring under pressure for educating children according to prevailing curricula and thus were not especially sensitized to those problems in behavior which disturb or frustrate the teachers' interests in the educational achievement of pupils. Moreover, in making their ratings, the clinicians were influenced, both by their particular professional interests and by specific instructions, to consider (1) the effect produced on the future development and on the social, emotional adjustment of the child by the possession of any behavior problem which is allowed to run its usual course; and (2) the need for remedial work, and the nature of remedial efforts, in treating the behavior disorders in question."

Upon the basis of this investigation, Wickman makes the following suggestions as summarizing our present knowledge of this problem. He recognizes, of course, that more extensive research is necessary to work out details and probably to modify these points of view.

(1) That behavior problems in children are those forms of behavior which are declared undesirable or unwholesome by social and personal attitudes. When considered from an objective point of view, behavior disorders arise out of a discrepancy between the child's capacity to behave and the requirements of behavior which are imposed upon him by parents, schools, teachers, companions, and social organization. The factor of adult attitudes which determines these requirements is an integral part of the production of the behavior problem as well as of the child's future behavior adjustment.

(2) That teachers' reactions to the behavior problems of children are largely determined by the direct effect which the behavior produces on the teachers themselves. In so far as the behavior attacks the teacher's moral sensitivities, personal integrity, authority, and immediate teaching purposes, it becomes recognized as a problem in behavior; in so far as behavior is agreeable to teachers, respects their authority, fits in with their

teaching purposes as well as their ethical beliefs, it is considered desirable behavior.

(3) That attacking types of conduct are regarded by teachers as the most undesirable forms of behavior, while many unhealthy tendencies of withdrawal and dependency are not recognized as symptomatic of maladjustment.

(4) That the usual treatment of behavior disorders in children is directed toward the undesirable behavior which is the symptom of maladjustment, instead of toward the underlying causes that produce the maladjustment.

(5) That by the very attitudes taken toward behavior disorders in children, the tendencies are for teachers to counter-attack the attacking types of behavior in children and to indulge habits of withdrawal and dependency. In either case, the unhealthy modes of response are often entrenched instead of being remedied. By counter-attacking the attacking behavior of children, two risks are taken: the child's difficulty of adjusting to and accepting authority may be increased; feelings of guilt and of personal "badness" may be invoked. Under either condition, the attacking forms of behavior usually continue. By favoring withdrawal tendencies and fostering habits of dependency in children, the child's capacity for meeting and facing the realities of social requirements in other situations is impaired.

(6) That a child's behavior is naturally more active, aggressive and experimental than the adult's behavior. Much of this natural activity and experimentation of children is regarded as problem conduct because it does not fit in with adult standards of controlled, orderly behavior. The child can not be considered a miniature adult in behavior any more than he is a miniature adult in mind and body. The unique psychology of child development applies as well to social behavior as it does to mental and physical development.

(7) That social behavior is not transformed by knowledge or instruction until that knowledge becomes integrated into the behavior of the individual. The blocks to such integration lie in the child's emotional and social adjustments as well as in his conditioned habits of behavior. Only in so far as the social experiences and attitudes of children are in harmony with the ideas that are presented to them, and to the extent that they can comfortably practice these ideas, can behavior be intellectually controlled.

For the incorporation of the above principles into the every-

day behavior of teachers, these further conditions appear to be essential:

(8) That teachers be given a more general knowledge of what constitutes normal child behavior. We are in need of a general shift of emphasis from the psychology of learning and of mental and intellectual differences in children to the psychology of the social development of children with particular reference to the essential differences between child and adult behavior. The need for understanding the sexual development and sexual behavior of children is especially indicated.

(9) That teachers obtain a dynamic picture of the social and experiential backgrounds of children, as well as of their physical and mental capacities, which operate in the production of healthy and unhealthy modes of child behavior.

(10) That teachers be instructed in methods of treating behavior problems of children by directing treatment to the underlying emotional and experiential factors that produce these problems.

(11) That teachers be given practice in such methods of treatment. If attitudes are to be modified, it is not sufficient to present facts and principles, nor is it profitable to attack the teachers' practices. New ideas must be emotionally accepted, believed in, and actually practiced before they become effective.

(12) That some attention be paid to the emotional and social adjustments of teachers themselves, in order that they may be able to withstand the shocks of disobedience, defiance, stealing, lying, truancy, and sex behavior which arise from time to time among children.

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PART II

PEDAGOGICAL PROCESSES AND PROCEDURES

CHAPTER VI

THE PSYCHOLOGY OF TEACHING

Psychological Analysis of the Teaching Process

In the discussion of mental functions it has been contended that educative activity consists of improved adjustment to the external environment and to conditions existing within the learner. Teaching as a systematic process is presumed to facilitate and simplify this adjustment. Adaptive orientation, both literal and figurative, can and would take place without the benefit of teachers. Because of trial and error learning, however, the number of errors would be high and loss of efficiency needlessly great. With the enormous accretions to the social heritage and the accumulated stock of human knowledge which must be transmitted to each succeeding generation, it becomes increasingly necessary to shorten the process of learning. Consequently, even in inductive teaching which aims to lead the learner through the essential elements of experience originally precursive to the reaching of a final generalization, the process must be shortened. From this point of view, teaching is nothing more or less than a catalytic agent which tends both to alter the final reaction and to speed it up.

Interpreted in terms of the conditioned response hypothesis, the major tasks of teaching are encompassed in securing the proper responses and facilitating the process of learning. In the latter process, the whole technique of motivation which

has been discussed in Chapter IV is involved. In the former, several theories prevail at present as to the psychological function of the teacher in the learning process. These theories will be discussed later.

One of the most noticeable and pronounced changes in both theory and practice of recent years has been the change of opinion concerning the place which the teacher occupies in the learning situation. The importance of the activity of the learning organism to consummate mastery of material has been known longer than it has been adequately incorporated in actual teaching procedure. At present, there seems to be a tendency to overstress mere activity. Formerly, both the organization and functioning of the average school placed the dynamic center with the teacher, while at the present time the tendency is to shift it to the pupil.

Psychologically analyzed, then, the task of teaching involves the execution of the following functions in various proportions and combination: First, the teacher transmits to the pupil certain factual material. Generous as is the time allowed to the educative process in modern youth, there is no opportunity for an inductive mastery of all facts. Therefore, the teacher imparts certain information in a more or less dogmatic fashion and requires the mastery of it as given. This is particularly true in the lower levels of learning where mastery of fundamentals is essential. As the learner becomes more competent, the teacher's function changes and gives way to another type of guidance. Second, the teacher then guides the pupil in self-development. The bulk of information to be imparted and the demands of accuracy necessitate the authoritarian technique. Progressively involved conduct, however, implies progressive self-guidance and this again alters the position of the teacher.

A psychological analysis of the process of teaching gives no reason to think that mere knowledge of content is of especial advantage on the technique side of the guidance function. True, it is difficult for a teacher to maintain the respect of a class and to progress well with work unless teacher-knowledge is far above the level necessary for the performance of classroom duties. Yet, technique is not an intrinsic attribute of content but rather an acquired art in itself.

Recent interest in character and personality training as gained in the school has emphasized the value of some of these extracurricular products of the teaching process. Unfortunately, many of these outcomes are not susceptible of measurement by standardized testing procedures. This is true, partly because of their comparative intangibility, and partly because results are less immediately evident in outward manifestations than are indications of content mastery.

The modern psychological view of the complete process of teaching involves far more than imparting of content, skills, or subject matter mastery. The skilled teacher who is cognizant of the psychology of the learning situation becomes an important factor in the determination of the pupil's total conduct. Society in general and parents in particular are increasingly insistent in demands for complete conditioning of pupils for life in modern social conditions. Schools have attempted to meet this demand in a variety of ways including extracurricular activities, expansion of athletic programs, and so forth. Another method is to be found in adequate broad social guidance by a teacher trained and versed in the psychological principles of adolescent development.

Theories Concerning the Place of the Teacher in the Educative Process

In the psychological analysis of a total teaching situation, it must be recognized that the teacher is only one factor in the highly complex environment to which the learner responds. There is sometimes a temptation to think that the child is in *rapport* with the environment solely through the medium of the teacher. There is also the implication that, were the teacher removed, the child's learning progress would be retarded. It is a common assumption that the teacher's contribution to the child's progress in any curricular activity is represented by the amount of the learner's knowledge at the end of the year minus the amount at the beginning of the year. The net gain is usually viewed as the result of the teaching process. In the same way, it may be said that the child enters school possessing only the most rudimentary fundamentals of a socially significant education and emerges at the end of eight to twelve grades with a substantial increment of learning. Here again, it is easy to infer that the total gain has been largely the result of the influence of formal teaching. Some institutions of higher learning publish lists of distinguished graduates as evidence of superior teaching and standards in disregard of the fact that perhaps the exemplary individuals dignify the teaching rather than the reverse.

The belief that increases in children's skills, knowledge, and experiences are due solely to the effect of the teaching process especially during the school year has not passed unchallenged. Judd, in his discussion of psychological factors in secondary education, has laid stress upon the importance

of maturity in educative development.[1] He emphasizes the social aspects of the process of maturity, but makes it clear that some of the important elements are inherent within the learning organism itself. The investigator who has been perhaps most persistently interested in this problem has been Courtis. The exact rôle which teaching occupies in conduct evolution has been the primary concern of many of Courtis's investigations. His general conclusion is that the contribution of teaching to the process of individual development has sometimes been over-rated and that teaching is only one of a complex matrix of situations which influence development. He says, for example, "Development is a natural process to which teaching merely contributes as one among the many factors involved. The fact of the matter is that live children inevitably grow. The training given in school affects growth in educational abilities somewhat, but the actual change in score that takes place in any individual is determined, not alone by teaching, but by the natural growth-rate of that individual as well." [2] This quotation hints that the teaching situation in many cases has been regarded as a more significant item in learning than it actually may be. Subsequent to the publication of the experiment to which reference has been made, Courtis has done further work which indicates that children will learn and learn fairly well without any formal teaching whatsoever, provided there is enough interest and incentive to cause them to work at the task which is to be mastered.

[1] Charles H. Judd, *Psychology of Secondary Education* (Ginn and Company, 1927).

[2] S. A. Courtis, "The Measurement of the Effect of Teaching," *School and Society,* XXVIII (1928), p. 53. Also see *The Measurement of Growth* by S. A. Courtis (Brumfield and Brumfield, publishers, 1932).

One draws the obvious inference from such a work that there is a tendency to be rather discouraged about the value of teaching as a means of facilitating learning, and with these results as a criterion the least that can be recommended is a drastic improvement in techniques of teaching. There are also factors to be considered which somewhat offset the ominous implications of investigations which have thrown into question the highest regard for the place of the teacher. First, there is the fact that investigations have so far failed to measure all of the effects which the teacher exerts upon the developing pupil. Hitherto, controlled experiment, as one would naturally expect, has been given over to the measurement of gains made in the mastery of content material which can be accomplished by standardized techniques. Although this method possesses the patent merit of objectivity, it is doubtful whether teaching can be defined solely in these terms. While it is easily conceivable that a teacher might be so poor in technique and so unattractive in personality as to actually interfere with the learning of a class, it is doubtful whether this is usual. The most immediate effects of teaching are perhaps the content masteries which result. These are easily measured and lend themselves readily to objective experimentation. The equally significant influence of the teacher as a social force is less susceptible to experimental attack. Second, teachers are required in a complicated, conventional society. Sheer unguided maturity is no guarantee of correct training. And here, too, controlled experimentation is lacking. It would be extremely interesting to know what would happen to children who developed entirely independently of both society and teaching other than experience. Provided that abandonment did not come too early it is probable that survival might occur. Physical growth would take place. Ex-

perience of a sort would be gained. Skills directed toward self-preservation and sustenance would be mastered. Social graces would be almost entirely lacking. Even reasonably well authenticated cases in which anything of the sort has occurred are rare. There are, however, a few. Of these, the story of the Wild Boy of Aveyron is among the most diverting. The following quotation gives the setting:

"In these stirring times there lived at Paris a young medical man, Jean-Marc-Gaspard Itard, born in the provinces, who had early achieved some distinction in his profession and at the age of twenty-five was appointed physician to the new institution for deaf-mutes. A reflective, philosophically minded young practitioner, believing with the generous enthusiasm of youth in his own judgment, the future of his art, and the progress of humanity; willing, unlike many generous enthusiasts, to devote his time and thought to the improvement of mankind, and also, it must be said, to the business of proving himself right. A young man, Itard had the great advantage of not knowing too much. He could leap light-heartedly at a task before which maturity would quail. He had his opportunity.

"In 1799, the year seven by the new calendar, there was published in the *Journal des Debats* a letter by one Citizen Bonaterre, describing a wild boy taken in the woods of the Department of Aveyron. According to reports, the child was a specimen of primitive humanity. He had been found almost unclad, wandering about at the outskirts of the forest in which he had apparently lived for some years, a stranger to human kind, eking out a precarious existence as best he could. The boy was brought to Paris and soon became a nine days' wonder. People of all classes thronged to see him, expecting to find, as Rousseau had told them, a pattern of man as he was: 'When wild in woods the noble savage ran.' What they did see was a degraded being, human only in shape; a dirty, scarred, inarticulate creature who trotted and grunted like the beasts of the fields, ate with apparent pleasure the most filthy refuse, was apparently incapable of attention or even of elementary perceptions such as heat or cold, and spent his time apathetically rocking himself backwards and forwards like the animals at the zoo. A 'man-animal,' whose only concern was to eat, sleep, and escape the unwelcome atten-

tions of sightseers. Expert opinion was as usual somewhat derisive of popular attitude and expectations. The great Pinel examined the boy, declaring that his wildness was a fake and that he was an incurable idiot. In one of his standard works, indeed, this authority later speaks of 'the pretended Wild Boy of Aveyron.'

"Among those who saw the child was the young Itard, who, fired with the notion that science, particularly medical science, was all-powerful, and perhaps believing that his older colleague was too conservative in applying his own principle of the curability of mental disease, came to the conclusion that the boy's condition was curable. The apparent subnormality Itard attributed to the fact that the child had lacked that intercourse with other human beings and that general experience which is an essential part of the training of a normal civilized person. This diagnosis Itard was prepared to back by an attempt at treatment, and the boy was consequently placed under the young doctor's care at the institution over which he presided." [3]

The above quotation indicates that entirely independent individual development is not likely to result in a socially competent being. Of course, there is no way of knowing just how bright this child would have been under normal circumstances. Itard did not succeed in teaching the boy to talk but this failure may have been due to an early injury which affected the muscles of the throat. He did succeed, however, in imparting to the wild boy many of the social graces. Even here the task was arduous because of the tremendous amount of early conditioning of an entirely different utilitarian value. He says on this point:

"In order to appreciate the present state of the Wild Boy of Aveyron, his past condition must be brought to mind. To be judged fairly, this young man must only be compared with himself. Put beside another adolescent of the same age he is only an ill-favored creature, an outcast of nature as he was of society.

[3] Jean-Marc-Gaspard Itard, *The Wild Boy of Aveyron,* translated by George and Muriel Humphrey (The Century Co., 1932), pp. vi–vii.

But if one limits oneself to the two terms of comparison offered by the past and present states of young Victor, one is astonished at the immense space which separates them; and one can question whether Victor is not more unlike the Wild Boy of Aveyron arriving at Paris, than he is unlike other individuals of his same age and species." [4]

Cases of this kind can not be regarded as standing in direct comparison with what would happen to a child who was left to his own devices in a social medium. In both cases, controlled experimentation is difficult. It is highly probable, however, that the child, unguided in a social situation, would fare little better. The social situation itself serves as a teaching agency. The teacher is really the accredited representative of society, supposedly versed in many phases of the social heritage as well as in the techniques of imparting them, who interprets society to the child and guides its progressive adjustment.

If one goes from school to school and city to city and talks to teachers, principals, supervisors, board members, parents, etc., it is found that there does not exist unanimity as to the place of a teacher in the educative process. The following points of view are some which would be encountered:

1 The teacher should concentrate effort principally upon providing content. Those who hold that this is the paramount objective of the teacher's efforts would maintain that there is a tremendous amount of factual content material which must be mastered by the child. This content, as such, is valuable above all else. The teacher need think little about method except in its disciplinary phases. The facts are presented. The children master them. If they do not attain mastery they are punished. Education is inherent in the material itself.

[4] *Ibid.*, p. 53.

2. The teacher should provide content and instruct. This theory differs from the foregoing one in that it throws a somewhat heavier emphasis upon method. It entails more or less organization of material. It does not emphasize quite so heavily the intrinsic value of subject matter. It takes a little more cognizance of the psychological nature of learning by devoting some attention to method.
3. The teacher should provide content and motivate the learner's mastery of it. This view of the function of the teacher is still more in accord with psychological principles. It admits the learner to be a dynamic organism. Learning is viewed as a moving, active process and not a passive, receptive one. Impression will be gained through expression. This method is one used in many of the so-called modern activity schools. In these there is an emphasis upon motivated activity. The teacher is not a task master but rather one who, by a series of subtle devices, arouses and maintains interest.
4. The teacher should provide content, motivate activity, and direct progress. This statement of the functions of the teacher probably most nearly represents the point of view which it is here desired to endorse. Guidance and direction are important elements in this type of teaching. The teacher does not regard guidance as a mandatory process but rather one of counseling and suggestion. Motivation also is grounded in the psychological nature of the child. Content is viewed, not as an end in itself or as possessing any intrinsic merit, but merely as the medium by which the child passes from one level of adaptive experience to another.

In summarizing the facts concerning the place of the

teacher in the educative process, the following points should be borne in mind:

1. The teacher is only one of several factors which influence child development.
2. The results of teaching can not be measured by the difference in the total amount of knowledge at the beginning and total amount of knowledge at the end of any given period of time. Natural development will account for some of the progress.
3. Unguided development is unlikely to produce an individual adequately prepared to cope with the problems of modern society.
4. The teacher who is most likely to be successful in furthering conduct development of a desirable sort among pupils is the one who not only provides content but motivates activity and directs progress.
5. The social influence of the teacher in situations which can not be measured by standardized tests at present devised is of importance in pupil development.
6. The place which is assigned to the teacher in the general learning situation depends upon the psychological theory which is held and the nature of the learner and the learning process. For example, if one believes that learning may be entirely vicarious and in response to verbalisms, then the function of the teacher may be to do nothing but lecture. If it is held that impressions are effectively acquired only through expression or expressive activity, then the place of the teacher becomes predominantly one of guiding activity.
7. Finally, it makes an actual and real difference in specific teaching situations whether teaching is viewed as a

structure of content or an adjustment in dynamic functions.

Alternatives in Criteria of Teaching Efficiency

In this chapter the expression "teaching efficiency" has been used. The phrase "teaching success" also occurs as, indeed, it does in most critical studies of the pedagogical process. It must soon become apparent to any one who scrutinizes the problem, that "teaching success" is a relative term usually defined in subjective ways. So true is this that some investigators prefer to omit mention of "teaching success" and, in studying the problem, confine themselves entirely to objectively defined situations. For example, instead of making studies of "teaching success," it is possible to conduct investigations of the reasons given by superintendents why teachers are dismissed. This type of investigation makes no effort to define teaching success in absolute and final terms but concerns itself rather with pragmatic considerations upon which permanence of tenure depends. The difficulty is that only the superficialities of teaching are apt to be involved. The final judgment which is passed upon a teacher's effectiveness should be rendered upon more fundamental considerations than tenure of office. Even these incomplete observations, however, are sufficient to indicate that several relatively tenable opinions may be held concerning what constitutes teaching efficiency. The more important of these may be described briefly.

1. *Administrative.* In terms of sheer practical expediency the administrative criterion of teaching effectiveness, while perhaps not based upon any ultimate standards or even upon defined elements of judgment, is of moment. Administrative

and supervisory officers have devised rating scales for the measurement of teaching success and effectiveness and the itemizing of qualities to be considered has undoubtedly contributed to an increased reliability of this technique, but in the last analysis it nevertheless depends upon subjective judgment. This has been noted by Boardman,[5] who points out that objectively measured changes produced in children by the teaching process are the criteria of teaching efficiency which would possess the most validity. He emphasizes the fact that such measures do not now exist. This leaves the technique of judgment by experts as possessing highest validity. From this standpoint, a "good" teacher is one who is judged so. There should be added also the fact that to get a valid measure of teaching efficiency, the effect of the teacher as such has to be isolated. This makes the task even more difficult, as Courtis has been constrained to indicate. Regardless of the inadequacies of the administrative criterion, it is necessarily in effect in practically every school system. It makes teaching not entirely a problem of imparting subject matter, but rather frequently a question of solving questions of personal relationships.

2. Economic. The economic criterion of teaching effectiveness need not be considered at length. The assumption is that the teacher who is receiving the highest salary is the best one. Such a criterion is closely allied to the administrative, since salaries are determined by administrative judgment.

3. Ethical. The ethical criterion minimizes administrative judgment, salary of the teacher, and even extent of pupil content mastery and holds that the character of the pupil

[5] Charles W. Boardman, *Professional Tests as Measures of Teaching Efficiency in High School* (Teachers College, Columbia University Contributions to Education, 1928, No. 327).

when he has finally been educated is the best indication of the sort of teaching to which he has been subjected. Practice based upon this theory has been carried far in some schools. For example, the old type of report card occasionally has been abandoned altogether and a new type adopted which evaluates character traits of the pupil and almost entirely slights grades indicating performance in the formal curriculum.[6]

The ethical criterion of teaching effectiveness implies that successful teaching does not consist entirely of the successful transmutation of certain information from the mind of the teacher to that of the pupil. It looks toward the social objectives of education and defines teaching success in terms of subsequent citizenship performance. Theoretically, this is a highly desirable basis for judgment of teachers. It probably can be contended with a considerable show of plausibility that one of the needs of education at the present time is an emphasis upon character values. It is difficult, however, to proceed practically with this criterion in selecting and retaining teachers. The reason is that character values resulting from teacher influence do not become immediately apparent but emerge after a process of coördination and integration.

4. Academic. From a strictly conservative angle it might be said that the academic judgment of a teacher's effectiveness is the one which should always be given. For, after all, are teachers not employed primarily for the purpose of imparting certain information to children? Therefore, if one wishes to estimate how well a teacher has done his or her work, is not the logical way to go about this, to measure the extent to which the teacher has been successful in impart-

[6] Francis F. Powers, *Character Training* (A. S. Barnes & Company, 1932), p. 140.

ing the information? Standardized tests do this. Therefore, all that one has to do is to use standardized tests, compare the results with norms, and judge accordingly. As a matter of fact, those who desire to do this are not lacking. These people maintain that our school systems have expanded altogether too much, have become defined in too wide terms, and contain too many extracurricular ramifications. Therefore, the curriculum should be redefined in narrow terms and teaching success judged accordingly. The operation of this theory can be seen in an economic depression. Proponents of this theory are likely to be among the first to demand the abolition of the so-called "fads and frills" and to demand a return to the "fundamentals" in education. The teacher is then judged on the extent to which the pupils have mastered these fundamentals. A more naïve expression of the same thought is to judge teaching effectiveness by marks. Thus one hears of so-and-so being a "good teacher" because many pupils fail in her classes. The implication is that standards are high, teaching good, and a high quality of pupil performance necessary to pass the course. This, of course, is misleading. The fact of the matter is that teachers' marks, if corrected sufficiently for the operation of a number of usually uncontrolled variables, might prove a reasonably good index of the extent to which teaching has been effective in the narrowly defined academic lines, but taken at face value as given at the present time, they can not be said to be a criterion of the extent to which the teacher is succeeding in her total duty. On the whole, the academic criterion of teaching success is valid but partial.

5. *Psychological.* The psychological criterion of teaching effectiveness partakes of elements of several of the others which have been mentioned hitherto. Success according to

the psychological criterion may be defined in terms of improved pupil adjustment to life situations and problems through curricular activities which have been supervised by the teacher. This method of judging teacher success emphasizes what the pupil does and not what the teacher does. It also magnifies the end and not the means. Furthermore, it stresses a functional and not a structural criterion. It throws into strong relief the extent to which the pupil has been made familiar with the *relationship* existing between the material which has been learned and life problems. To draw the distinction, one might say that Teacher A, although imparting academic content well and having pupils who stand well on tests which cover content mastery only, is less successful than Teacher B who has done no better in imparting content but has made it of such live and real value to the pupil that its use in solving practical life situations is extensive. The difficulties of measuring teacher effectiveness with the psychological consideration of pupil conduct as the criterion are obvious. That these difficulties are not entirely insurmountable is indicated by the persistent attack which is being made upon them and which can not be said to be entirely futile. Symonds has thoroughly summarized the important phases of the attempt to measure these elements of conduct.[7] Hartshorne and May, in measuring phases of conduct which may be termed "deceit," have demonstrated that it is possible to isolate the effect of the teacher in effecting the adjustment problem of children when they showed that unselected groups of pupils tend to show more traits of deception under some teachers than under

[7] Percival M. Symonds, *Diagnosing Personality and Conduct* (The Century Co., 1931).

others.[8] The technique employed by Hartshorne and May can be elaborated to further use in estimating teacher influence upon pupil conduct.

Psychological Bases of Teaching Aptitude

It has for some time been realized that the intelligence and content mastery of the teacher are by no means the only factors which make for success in teaching. Boyce [9] early pointed out that teachers are too often rated by their administrative or supervisory officers on an unanalytical basis of general impression. Following the lead of Elliott and others, Boyce worked on score cards which would make ratings more objective. This type of study assisted in increasing the reliability of judgments of teachers. There followed many investigations of teacher rating. These later studies attempted to pry more deeply into the personal traits of the teacher than do administrative ratings. Morris,[10] for example, after discussing at length a "Trait Index" and considering the predictive value of various measures of temperament for teaching success, comes to the conclusion that in weighing personality traits and their relation to teaching, the whole personality must be always in the forefront. In other words, measurement of discrete traits, however accurate, is bound to bear only a partially complete relationship

[8] Hugh Hartshorne and Mark May, *Studies in Deceit* (The Macmillan Company, 1930), p. 329.

[9] Arthur Clifton Boyce, *Methods for Measuring Teachers' Efficiency*, Fourteenth Yearbook of the National Society for the Study of Education (The University of Chicago Press, 1915), p. 77.

[10] Elizabeth Hunt Morris, *Personal Traits and Success in Teaching* (Teachers College, Columbia University Contributions to Education, No. 342, 1929), p. 2.

to any standard of efficiency which may be employed as the other variable, because of the significant emergent value of the operation of temperamental traits in combination with each other. Knight [11] concluded that interest in one's work is a highly determinative factor in making for success in teaching. This conclusion was not based upon direct measures of interest, since these were not available at the time of the investigation but upon indirect measures. Knight also emphasized the point stressed by Morris to the effect that the whole personality or the general "Trait Index" is of especial importance in the actual teaching situation.

Haggerty has recently maintained that, in spite of the careful work which has been done in attempting to determine the factors by which teaching success may be forecast, the net result of all experiments so far has not been commensurate with the amount of effort expended. The immediate practical importance of the work in teacher training, not to mention its significance to prospective employers of teachers, has undoubtedly served to keep interest in the problem alive in spite of only partially satisfactory results. Haggerty [12] emphasizes, and probably correctly, the fact that many of the studies have been too "structural" in nature. In other words, many have been correlational studies of comparatively static traits of the teacher's temperamental make-up in relation to one another; intelligence, academic training, administrators' rating, and other selected items of teaching success. A fundamental psychological basis of teaching apti-

[11] Frederic Butterfield Knight, *Qualities Related to Success in Teaching* (Teachers College, Columbia University Contributions to Education, No. 120, 1922), p. ix.

[12] M. E. Haggerty, "The Crux of the Teaching Prognosis Problem," *School and Society*, XXXV (1932), 545–549.

tude which Haggerty maintains has been to date overlooked in all the investigations involves the functioning in actual teaching situations of the many traits which have previously been subjected to scrutiny by experimenters. This item, to which insufficient attention has been given, is the teacher-pupil relationship. The point is emphasized that even the preliminary work which would be directed at expressing relationship in objective terms and devising reliable measures of it has not yet been done. Haggerty believes that the investigation of the teacher-pupil relationship problem does not lie without the scope of the experimental attack. He points out that psychological elements of teaching aptitude are probably more generously possessed by people than is at present supposed. He inveighs against the distribution of the general population into bi-modal groups, members of one being able to teach and members of the other being unable to do so. A reasonably satisfactory objective investigation of the teacher-pupil relationship as a generalized problem would, in Haggerty's opinion, assist not only those professional teachers who would naturally be interested but also many other classes in the general population such as parents.

It is not impossible to relate the points which Haggerty has stressed to previous experimental work. It has been mentioned that many of the previous investigations have noted the importance of the total personality of the teacher as a functional entity even though the investigations themselves had usually been concerned with the study of separate traits. Haggerty's suggestion is that one begin rather than end with the total personality of the teacher and observe how it operates in the actual teaching situation. This total personality may be termed a psychological emergent, and a

brief consideration of the nature of the psychological emergent is pertinent in attempting to understand the general psychological basis of teaching aptitude.

One of the principal difficulties with efforts to study objectively the psychological nature of the teaching process is that the procedure has been almost entirely analytical. Far more should concern be with the actual changes produced in pupils' conduct. Does Latin contribute only to increase facility in etymology or does it have more far-reaching social effects? The same question holds for algebra, history, music, etc. True, the analytical technique supplies lists of personal qualities or behavior performances. One way, which has been used, to secure such a list is to ask a large number of pupils to state the factors in the teacher performance which help most in the learning of their lessons. Another method is the so-called "job analysis" procedure in which the material furnished by supervisory reports is compiled in the form of a statement of the things which a "good" teacher does or does not do. Sometimes, weaknesses in performance, instead of being stated negatively, are stated positively and with this treatment the result is a lengthy list of desirable teacher qualities. There seems to be a tendency to follow this direction of attack when the approach is from the sociological standpoint.

It is likely that when one has such a list of teacher traits, the problem is still not well advanced toward its solution. For discrete traits or qualities, however carefully they may be defined and isolated, are significant in so complex a performance as a teaching situation only when observed in conjunctive functioning with the other qualities which make up the total teaching personality of the individual. It is at this point that the idea of emergence becomes important.

This idea is really a mathematical concept in which each variable must be considered as operating with all the others. Changing the quantity, quality, or function of one variable necessarily affects all the rest. Briefly stated with reference to the problem at hand, the doctrine of emergence would hold that the effect of the teacher upon pupil conduct must be determined in terms of the total teaching situation or teacher-pupil relationship and, furthermore, that this effect can not be accurately predicted by a consideration of separate personality traits, however accurately measured they may be. It is for this reason that, in teacher training, practice teaching experience is provided partly as a predictive device, for, if it were possible to subject an individual to an elaborate battery of tests, take the scores and predict accurately the performance in actual teaching situations, practice teaching would be unnecessary.

The same thing which has been mentioned concerning the teaching situation may be observed in numerous instances of everyday experience. For example, our psychological knowledge of water as a perceptual experience is not gained from experience with hydrogen and oxygen separately. The wetness, motility, and other qualities of water are known through experience with the combined hydrogen and oxygen as a total situation, water. People must be experienced in the same way and understanding of human beings can not be gained by a study of the human counterparts of oxygen and hydrogen separately.[13]

The point being here emphasized is the relative value and significance of even measurable traits. The implication in "relative value" is that the functional value of personality

[13] The whole *Gestalt* point of view deals with this at length and those interested in further reading along this line are referred to the writers on *Gestalt* psychology.

traits can not be stated categorically. It must be regulated by the active presence of other traits and, since the number of these is large, the possible number of combinations or emergents is correspondingly increased. The best that can be done in attempting to formulate generalizations is to state tendencies. For example, one finds frequent mention of sarcasm as a poor disciplinary technique. Perhaps it is. But some teachers possess just the right proportions of sense of humor, knowledge of individual pupil sensitivities, impersonality of manner, etc., to permit them to employ effectively an amount of sarcasm which, in teachers less happily endowed, would be fatal. Thus it can readily be seen that the handy little list of traits possesses only an academic interest as being a statement of the elements involved and is but a remote clue to the conduct that will actually result when certain combinations of traits as comprised in a given individual impinge upon the pupil.

It happens, luckily, that emergents are not unalterable. Change the proportion of oxygen and hydrogen, and you do not have water. Stop using sarcasm and you do not have the same total teaching situation. In attempting to improve one's performance as a teacher, the analytical effort is by no means entirely futile. Improvement consists of altering the amount and proportion of traits when results have been unsatisfactory until an effective adjustment is made.

Techniques in Teacher Rating

Attention has been called to the overemphasis placed upon relatively unimportant aspects of the teaching problem. It has further been noted that the evaluation of teaching success may be made from any one of several angles. However

valuable administrative ratings of the teacher may be, they serve a superficial purpose. The psychological criterion must be in terms of pupil conduct.

With pupil conduct as the effective criterion of the nature and efficiency of teaching, several different aspects of the problem may be discerned. In other words, even with pupil conduct as a criterion several varying possibilities exist. Some of these are noted in the following points.

1. Teacher rating by the pupil. Of recent years several institutions of higher learning, in attempting to improve the teaching performance of staffs, have resorted to the technique of consulting the pupils on the value of the teaching. This has been done in various ways in various institutions, but it usually takes the form of a questionnaire which the pupils fill out evaluating textbooks, teaching in general, teacher personality, etc. Objection has been raised to this technique on the ground that pupils are not capable of judging either the intrinsic final functional value of the content which is being taught or the fundamental nature of the teaching process itself. But to this contention it may be replied that no one knows as well as the individual pupil the effect which the teacher is having upon his conduct. And there is no way to gain this valuable knowledge except by watching the conduct of the pupil or by asking his reactions which result from the teaching to which he is being exposed. Granting a fairly high degree of honesty in the response, the technique of asking the pupil his reactions is valid. Furthermore, no *a priori* criteria can approximate in value a reasonably accurate introspective estimate. Still further, such reports make a valuable supplement to standardized test results as indications of the efficiency of teaching. It is rather amusing to note that, in the long history of attempts to evaluate

teaching efficiency, an effort to find out what the pupil actually thought about it or how he was reacting was one of the last devices. The point is not that pupils rate teachers in terms of efficiency scales as such, but rather that an opportunity be accorded them to state the changes which the teacher is producing in their own behavior. This any pupil on even low grade levels is able to do. The final judgment as to the efficiency and social significance of these behavior changes is to be made by others who do the actual teacher rating.

2. Rating by standardized test batteries. It is probably futile to attempt to discern any single criterion of the effect of teaching. The best that can possibly be done is the collection of a fairly accurate battery of tests which will measure widely different functions and products of the teaching process. Reference has already been made in this chapter to Hartshorne and May's demonstration that teachers show measurably discernible differences in the extent to which they cause pupils under their charge to resort to deceitful conduct. It has been noted in this connection that there is no reason why this technique may not be further elaborated with productive results. Test batteries of this sort should contain at least three elements:

(a) Check-up on the educational progress of the pupil
(b) Measurement of increased social competence
(c) Tests of emotional stability and adjustment

It has been customary in many cases to stop with the first of these checks. Terman, however, has intimated that the teacher's damaging effect may not be confined solely to failure to impart subject matter adequately.[14] It must be

[14] Lewis M. Terman, *Hygiene of the School Child*, revised edition (Houghton Mifflin Company, 1914).

admitted that accurate tests of social competence are not yet at hand. Close observation, however, is sufficient to show numerous cases of pupils who have native ability to adjust socially, woefully harmed by inadequate disciplinary or other techniques. On the emotional side also, the ill effects of a clumsy teaching technique are incalculable. Even at the college level, it is not at all uncommon to find individuals upset for a whole quarter by being forced to give an oral report which has been terrifying to contemplate. It is not necessary to employ a long series of delicate measurements to detect teachers who are causing emotional upsets in students. No more elaborate technique is necessary than asking the students themselves.

3. Opinion of parents. At first glance it may seem to be a highly unscientific and haphazard procedure to go to parents in an attempt to evaluate teaching effectiveness. But, granted unbiased integrity of response, they provide one of the best sources. For who are better able to judge pupil conduct when out of school and uninfluenced by the regimen of the school than parents? And yet, only recently have *systematic* attempts been made to get parents to coöperate in determining the effect which teaching is having upon the individual's behavior. The most persistent efforts are being made by those interested in character education. Consider, for example, the suggestive technique of attempting to determine the effectiveness of organized character education being tried in the school by enlisting the aid of parents in the observation of changes which were being produced in pupils as evidenced in their behavior at home.[15] In addition to the rating of parents, there were used also the ratings of teachers and

[15] M. E. Gladfelter, "Can We Educate for Character?" *Phi Delta Kappan,* XV (1932), 10–12.

self-ratings by the pupils. Results were treated statistically and found to be significant. Noteworthy in this effort was the attempt to employ the parents as a means of checking pupil conduct outside of school. The method in this case may well contain implications for the beginning teacher. Probably no more valuable lesson could be imparted to beginning teachers than that of forming the habit of keeping in close touch with the parents of one's pupils. This must be done informally since, outside of parent-teacher and similar organizations, no formal means is provided. The average school report card contains no opportunity whatever for parents to express themselves systematically on the effect at home of the work at school. At present, only the more aggressive parents, who, perhaps, being dissatisfied with some development come down to school to interview either administrators or teachers, make themselves heard. The voice of most parents is faintly audible. Active school administrators keep in touch with parents but frequently their information is not adequately transmitted to the individual teachers who are, in the last analysis, most intimately concerned. When all is said and done, the teacher, beginning or otherwise, who wishes successfully to maintain this important social contact, must do so on his own initiative. No procedure is more demonstrative of the success which one is having in his work.

The Prediction of Teaching Success

It would obviously be of practical advantage to be able to determine the psychological factors which make for teaching success at a stage early enough in the would-be teacher's development to avoid waste of his time and money when

failure is likely. Enormous amounts of work have been done in an attempt to determine these traits. Many correlation studies have been run, often involving measurements which are exceedingly minute. Avent has given in detail, involving hundreds of subheads, the actual behavior characteristics of excellent and poor teachers.[16] Palmer, in his discussion of the ideal teacher, lists the following factors which are of value in predicting success in teaching.

(1) The aptitude for vicariousness
(2) An already accumulated wealth
(3) The power to invigorate life through learning
(4) The readiness to be forgotten [17]

Barr has approached the problem from still another angle and has attempted to settle the issue by determining the characteristic differences between good and poor teachers. In general, Barr found four major types of difficulty characteristic of weak teachers:

(1) Deficiencies in knowledge of content
(2) Errors in method or technique of teaching
(3) Unfortunate personal idiosyncrasies, and
(4) Inability to maintain discipline [18]

Broadly speaking, it may be said that investigations which have attempted to relate such restricted measurements as grades earned by the students during a training career to teaching success have been fruitless. Correlations in such cases have been almost uniformly low, and it has become increasingly apparent that the social factors involved are so important

[16] Joseph Emory Avent, *The Excellent Teacher* (Jos. E. Avent, Publisher, 1931).

[17] George Herbert Palmer, *The Ideal Teacher* (Houghton Mifflin Company, 1908, 1910).

[18] A. S. Barr, *Characteristic Differences of Good and Poor Teachers* (Public School Publishing Company, 1929).

that no attempt to define teaching success in strictly academic terms can possibly be crowned with success. Bearing in mind what has been said about the nature of psychological emergents, it is no easy task to formulate a list of mental, social, and emotional traits which should be possessed by all teachers. Some day a statement in objective terms may be possible. At present, to attempt to state all the possible permutations and combinations of personality and other traits which go to make up a successful teacher would involve an enormous amount of detail. There is no question but that personality traits may serve to counteract deficiencies in technical knowledge or method. The reverse may also be the case. Only general statements can be made, however, in this connection.

Kriner, after considerable experimentation on the problem has come to the following conclusions concerning the factors upon which teacher success depends:

1. Stamina or persistence is an important item in teaching. Kriner found that students who persistently and successfully pursued the study of subjects such as Latin and mathematics are more apt to succeed later in their teaching efforts. In other words, the teaching profession as it exists to-day requires a comparatively long period of learning through which the learner must pass with more or less success and for which a good degree of persistence or perseverance is necessary.
2. Early and continued interest in teaching is highly indicative. Such an interest has the advantage of a long period of habit reënforcement. The psychological effect upon the learner of apathy and indifference and lack of interest on the part of the teacher are too well known to need elaboration. If there is one thing upon which students of this problem are agreed, it is that lack of interest on the part

of the teacher is bound to be detrimental. Kriner is inclined to value Latin, mathematics, science, and similar subjects for their predictive value, not in terms of the content itself or the possibility of correlation of grades with items of teaching success, but rather in terms of the amount of persistent effort, attention, and concentration necessary to acquire these subjects and the possibility of a transfer of these same traits to the general tasks required in teaching.

3. Participation of the future teacher in extracurricular programs which are conducted during the period of secondary education contains some predictive value for teacher success.
4. Individuals who lack a persistent and rather long time interest in teaching or who are planning to use it as an intermediate step to some other line of work should, according to all criteria advanced by Kriner, be barred from training to become teachers.
5. There is no great difference between the traits or characteristics necessary for success in the elementary school and high school. In general, Kriner believes that the traits necessary for success in high school are more readily definable than those necessary for success in elementary grades.[19]

Not only is it a matter of concern to administrators and those having charge of the teacher training to be able to pick out individuals who will succeed in school teaching, but also it is of economic interest to prospective teachers who are spending money only to fail later to realize their ambition. Those anticipating or beginning training for the profession

[19] Harry Luther Kriner, *Pre-Training Factors Predictive of Teacher Success* (School of Education, Pennsylvania State College, 1931), p. 79.

of teaching should check themselves upon the following points:

1. Persistent interest in teaching. The problems of teaching, particularly the disciplinary problems, will be aggravated if the teacher does not have a genuine enthusiasm.

2. Good physique. Teaching is not the easy task that it appears to some people. It requires physical and mental stamina. It is particularly conducive to certain types of neurasthenic and psychasthenic weaknesses. It is not a position for the emotionally unstable.

3. Academic preparation. Although studies of the relationship existing between academic proficiency and general success in teaching do not indicate that it is the most highly determinative factor, still it is necessary in order to do an effective and efficient job of teaching for one to possess adequate knowledge of subject matter. Even when an individual is able to get along with classes, final success as measured by standardized tests and administrative and supervisory ratings is bound to be lacking unless one knows one's subject.

4. Balanced control of action. It has been said that he who can not manage himself is not fit to manage others and this applies preëminently in the profession of teaching. Children resent nothing more quickly than highly personalized treatment especially when it is of a punitive sort.

5. Knowledge of the psychology of conduct. In the last analysis teaching is a process of conduct determination and control. Any one who has reached the age when he is competent to make a decision as to a life work knows the success which has met his efforts in the past to guide and direct the efforts of others. If such efforts, from youth onward, have

been unsuccessful, then the chances are that his teaching efforts will be likewise opposed.

The foregoing items indicate a few of the possible points of view in attempting the prediction of teaching success. It is pertinent at this point to consider some of the psychological factors involved in the teaching of average, subnormal, and gifted children.

Psychological Teaching of the Average Child

There is, of course, no "average" child. The idea of "average" is a statistical concept. In discussing the pedagogy of the average child one is concerned with individuals falling within defined limits of age, ability, interests, etc. The factor of individual differences should continually be in the mind of the teacher. Probably one of the major difficulties with past pedagogical efforts has been the tacit assumption that there is an "average" child. This assumption involves the erroneous corrolaries of standardized curricula, uniform methods, and unvarying devices. Students in "Education" courses sometimes remark that, although much is said about the exceptional, atypical, and unusual child, they leave not knowing what the pedagogy of normal children may be. The reason for this seeming inconsistency and discrepancy is the fact mentioned above; namely, the "average" child is a mere figment of the imagination. Children, in common with many other physical objects, exhibit deviations from the normal and it is for this reason that teachers in training are subjected to a discussion of the types and classes of possible deviations. By normal or "average" children in this discussion, therefore, is meant children who exhibit no pathological

or marked defect sufficient to set them apart from the group as a whole. The teaching of average children in this sense should take cognizance of the following points:

1. Continuous recognition of the factor of individual differences. One does not teach a class. One teaches ten, fifteen, twenty, thirty, or forty individuals.

2. Diagnosis of individual difficulties in conduct. Although the factor of individual differences has, for a considerable period of time, been recognized, only recently have adequate measuring devices to test these differences been perfected. Some are still lacking. Others, however, are available. A volume such as the one by Symonds on the general technique to be employed in the diagnosis of personality and conduct is helpful.[20]

3. Remedial teaching. The diagnosing of individual differences and conduct adjustments is but part of the technique necessary to do the pupil justice. As with a medical diagnosis, a pedagogical diagnosis is valueless unless something is done about the result. What is done is remedial teaching. Fortunately, there are available rather helpful treatments by subject of the techniques of remedial teaching. Brueckner and Melby, for example, have discussed the possibilities in diagnostic and remedial teaching.[21]

4. Attention to the development of social competence. The nature of social competence has already been discussed in Chapter III. The sum total of one's experience which goes to make up social competence is exactly equivalent to all of the experience undergone. Classroom experiences form no inconsiderable part of this total. Examining the more

[20] Percival M. Symonds, *op. cit.*

[21] L. J. Brueckner and E. O. Melby, *Diagnostic and Remedial Teaching* (Houghton Mifflin Company, 1931), pp. 490–550.

recent and effective techniques of teaching, such as the socialized recitation and supervised study, the fact appears that they have been designed, not so much to improve the efficiency of content teaching, as to insure a more social experience for the learner. It is in the effort to impart these more subtle values that excellent teaching makes itself known.

5. Development of pupil personality. Certain psychologists are inclined to be mildly derisive of efforts to train for such intangibles as "character," "mental hygiene," and "personality." This attitude of levity is probably based upon a misconception of the true nature of the qualities being trained. No one denies that even so elusive a trait as personality is founded on matter-of-fact habits. This does not mean that the problem has become a simple one. The task of ascertaining what habits should be produced and the technique of producing them still remains. Who can deny that year upon year of learning in a situation in which the learner is purely a passive listener must produce an individual of different personality set from one who has been trained in an activity program?

6. Development of character. Recent interest in the problems of character training is truly astonishing. This interest rivals in its cumulative magnitude the attention given to the most famous pedagogical doctrines in the history of education. Men in all walks of life are concerned. Widely diverse publications are commenting constantly upon it. For example, Warden Lawes of Sing Sing Prison, in an address to the National Education Association given June 27, 1932, was quoted in the newspapers as saying, "The splendid and costly educational program that has been the pride of our government through the decades has done nothing, and I

say this advisedly, to mold the character of our people. Its insistence upon scholastics has left no room for character training. In its zeal to build up a national ideal it has overlooked the individuals that make up the citizenship as a whole. It has been content with proficiency in major studies but neglected utterly the child's reaction to life responsibilities. Agility of mind rather than broadening of vision and development of character has been the test of scholarship." The place of the teacher in any sort of character education program is attested by all. No teacher to-day is alive to his or her responsibility who is not making some effort in this direction. Further discussion of character training will be given in Chapter XIII.

Psychological Teaching of the Subnormal Child

Wallin has gone to considerable trouble to provide a psychological diagnosis of the problems of subnormality.[22] He distinguishes four major issues:

(1) The problem of differential diagnosis of quantitative and qualitative subnormality.
(2) Provision of educational procedures to take care of the various types of subnormality.
(3) The development of effective systems of follow-up control.
(4) Measures designed to prevent subnormality.

With all the above problems, education is vitally concerned.

Generally speaking, it may be said that subnormality is of two kinds: (1) innate incapacity which is present at birth and which may or may not be amenable to therapeutic

[22] J. E. Wallace Wallin, *Problems of Subnormality* (World Book Company, 1921).

treatment; (2) below-average development at some stage of educational progress due not to inherent factors but to faulty early training, lack of interest, or similar factors. In connection with the first point, Goddard, who has devoted many years to careful study of problems of feeble-mindedness, estimated in a survey of the New York City schools that to say that two per cent of the school population is defective is conservative.[23] He offers as one theoretical solution either permanent segregation or physical sterilization to prevent increase in the number of defectives through propagation.[24] But he further remarks that neither of these solutions is a practical one at present, since social sanction is lacking. Thus, the absence of a biological solution augments the educational problem. Goddard demonstrates that in the characteristic school organization calculated to take care of the normal or average child little provision is made for subnormals. Unfortunately, the distressing fact remains that the school is saddled with this task. Therefore, an expansion of the educational system is necessary to take care of the contingency.[25] In school organizations which are large enough to do so, it is advisable to provide separate machinery for taking care of defective children. Psychological experimentation has shown that defectives are not capable of handling abstractions and, furthermore, that events and data which are not within the daily life experience of the individual defective are regarded as abstract for all practical learning purposes.[26] This pertinent fact should be continu-

[23] Henry H. Goddard, *School Training of Defective Children* (World Book Company, 1920), p. ix.
[24] *Ibid.*, p. 53.
[25] *Ibid.*, p. 59.
[26] *Ibid.*, p. 61.

ously borne in mind by those charged with the training of defectives. Pressey and Pressey, in treating the adjustment of the abnormal in school and social life, stress the fact that it is more frequently the home and school which are at fault than the child.[27] In other words, the child is "right." Not only does the school fail to take adequate cognizance and be adequately sympathetic with the subnormal individual, but worse still, actually produces abnormal conditions as Terman has pointed out.[28]

Since incorrect teaching may actually produce abnormal conduct and since special types of pedagogy are necessary for the subnormal, it is well to call attention to a few of the points which should be emphasized:

1. Nature of difficulty. An attempt should be made to determine the nature of the subnormality. In cases of artificial retardation the problem is often one of motivation. The content need not be simplified. In cases of fundamental lack of capacity, radical deviation in content and method may be called for. Further, many physical subnormalities lend themselves to nearly complete remedy. This would be true of some eye defects, cretinism, etc.

2. Methods. Children naturally subnormal should not be taught by quantitative modifications of ordinary teaching techniques. For example, it would be thoroughly futile to attempt to take care of a low grade intellect by assigning only half the number of problems required of a normal child. The conduct level is entirely different and teaching procedures must recognize this fact. Inskeep has pointed this out

[27] Sidney L. Pressey and Luella Cole Pressey, *Mental Abnormality and Deficiency* (The Macmillan Company, 1926), p. 287.

[28] Lewis M. Terman, *op. cit.*

decisively in a discussion of the technique of teaching dull and retarded children.[29]

3. Purpose. In the teaching of the genuinely subnormal child, attention to norms should be almost entirely forgotten. Preëminently in the case of the retarded it should be borne in mind that the task of a teacher is to make life happier and living richer, and that these values are not necessarily inherent in approximation to some standard accomplishment. Therefore, appreciation lessons, games, and simple projects should be used in abundance. Fortunately, the hedonic aspects of education do not always require an incisive intellectual attack and it is from this fact that one may draw considerable hope in the teaching of subnormal children. They, too, enjoy good music and lively games.

4. Success. It has been shown that mental hygiene and efficiency depend upon a psychological feeling of success and accomplishment. To those to whom success comes infrequently it becomes precious. One of the most unjustifiable things that can be done in the teaching of the subnormal is to produce any feeling of inferiority through lack of success. Thus, work is provided in ungraded classes for subnormal students. Failure in examinations and marks frequently produces a feeling of inferiority in pupils with connotations of the stigmata of failure. Judgments of accomplishment need not be entirely lacking but these should be based upon relative standards with each pupil's performance as a unit of measure and not upon external standards.

5. Social competence. Certain phases of social competence should be dwelt upon with care. Even dumb animals, such

[29] Annie Dolman Inskeep, *Teaching Dull and Retarded Children* (The Macmillan Company, 1926), p. 11.

as the dog, may possess loyalty which in a sense, is a social trait. Teaching the less devious minded individual in commendable social traits is sometimes easier than it is with those who are more gifted mentally.

Psychological Teaching of the Gifted Child

Sandiford, in discussing the nature of intelligence, treats the nature of vertical and horizontal growth in mental ability. He stresses the point that vertical levels of ability are innately determined. Barring cases such as cretinism in which the actual level of performance is veiled or obscured by pathological physical conditions which may be ameliorated, the vertical level of performance remains practically unaltered. It ranges from the IQ of the idiot which is about 20 to that of the supreme genius which is above 200.[30]

Formal education can do little to influence the innately determined vertical levels. The task of education lies in promoting horizontal expansion. In theory, there is no end to this expansion. Actually, however, memory seems to set certain limits which bear a discernible but unknown correlation with positions on the vertical scale.[31]

At present, it is not possible, as has been pointed out in an earlier chapter, to give accurate criteria of vertical levels. Knowledge of these, like knowledge of many scientific facts or semi-scientific facts, has been based upon empirical data, and future experimentation is confronted with the problem of defining these levels. Furthermore, as Sandiford points out, the activities which can be effectively engaged in on the

[30] Peter Sandiford, *Educational Psychology* (Longmans, Green & Co., 1930), p. 150.
[31] *Ibid.*, p. 151.

several levels have not been clearly enumerated. Consequently, it is impossible to formulate a list of teaching topics for use in each grade level. Miller has listed the following levels:

(1) The level of "empirical concrete."
(2) The level of associative reproduction.
(3) The level of conceptualization.[32]

The "empirical concrete" level, of course, corresponds to certain phases of subnormality or early development. The concrete must be concrete not only physically and in philosophical reality but also in the experience (empirical) of the learner. Associative reproduction (conditioned memory) may be based upon the empirical but it implies a retention and derived use of previous conduct. The low grade mentally do not aways profit by experience and are likely to repeat errors even when confronted by identical or similar problems. The normal individual by associative learning profits by experience and improves adjustments. Conceptualization is a final stage. It is comprised of symbolized and projected action. Analogy is employed in the solution of problems. Varied experience becomes crystallized in a formulaic fashion and the solution of problems is in terms of symbols. The solution found may then be transmuted into terms of concretes. The mentally gifted exhibit this type of learning.

Assuming the correctness of Sandiford's argument, and it is based upon a scrutiny of experimental data, one is forced to the conclusion that the pedagogy of the gifted does not consist primarily of a multiplication of the quantity of material which is offered to ordinary or subnormal children, but that it also involves changes in the qualitative nature of

[32] Harry L. Miller, *Creative Learning and Teaching* (Charles Scribner's Sons, 1927), p. 63.

the content. It would, of course, be possible to multiply the amount of work on a comparatively low level and make the sheer quantity sufficient to keep even a brilliant student busy. This is sometimes done. However, the brutal duplication of the same task time and time again produces intellectual ennui and boredom with inevitably resultant disciplinary problems and dissatisfaction on the part of the learner which become a problem of major magnitude to the teacher. As a matter of fact, one can see this happening in the classroom day after day. Many teachers are puzzled by the apparently paradoxical fact that disciplinary problems arise with the brilliant students, and when this is the case it is almost a sure indication that the work is incorrectly pitched.

The suggestion has sometimes been advanced that the way to provide for gifted and bright children is to place them in separate classes and thus simplify the problem of teaching. Goddard, in scrutinizing the arguments for and against this procedure, has come to the conclusion that objections to classes for gifted children are outweighed by the advantages.[33] Osburn and Rohan are somewhat less certain about this.[34] They discuss the following related problems:

(1) The need of attention to the education of the gifted children
(2) The nature of the education of the gifted in a democracy
(3) Basic differences between capable and dull students
(4) Construction of the curriculum for the gifted
(5) Methods with gifted children

Although not in entire agreement as to the exact plan which is best for the education of gifted children, all these writers

[33] *Op. cit.*, pp. 26–39.

[34] W. J. Osburn and Ben J. Rohan, *Enriching the Curriculum for Gifted Children* (The Macmillan Company, 1931), pp. 58–61.

agree that radically different methods of pedagogy are necessary for correct training.

There are several possibilities which may be adopted in organizing the school for the pedagogy of the gifted:

(1) Segregation into groups on the basis of intelligence test reports
(2) Differential promotion rate
(3) Contractual plans
(4) Wide participation in extracurricular activities by the bright
(5) Enrichment of the curriculum

It is difficult at the present time to come to a conclusion with regard to which of the above possibilities is best for maximum efficiency in training the bright. Fairly adequate arguments may be brought to bear to defend several plans. For example, in defense of the segregated groups it may be said that there is little question but that further advances in content acquisition, particularly on abstract levels, may be made when bright children are kept in one homogeneous class. Children who have been in the strictly segregated groups from the beginning to the end of their training career, while perhaps not conceited about their superior ability and attainments, might, nevertheless, be inadequately equipped socially. The teachings of some social psychologists lead to the suspicion that social competence is not a by-product of any automatic, abstract acquisition. The mere observation of some college professors in varying sorts of social functions would lead one to doubt the social value of authoritative knowledge of specialities. All things considered, in the hands of a reasonably skillful teacher it is likely that the wisely enriched curriculum and the judiciously varied methods of teaching with a homogeneous group will bear the best results.

The General Psychology of Teaching

Some of the principles enunciated hitherto may be summarized briefly for purposes of convenience:

1. Analyze the pupil. In all except the lowest grade levels, pupil interests, particularly in the junior and senior high school, have partially crystallized. Wherever possible, teaching should be based upon these interests. The work of Symonds in the diagnosis of interests has already been mentioned. Another contribution by this same author is valuable.[35]

2. Provide a varied curriculum early. Such a curriculum should provide a choice. It should give an opportunity for a pupil to follow his major line of interest. By "varied curriculum" is not necessarily meant a large number of studies, but rather, that within the scope of one study many opportunities may be offered for the pursuit of individual interest.

3. Encourage early creative or original effort. Mearns has shown the immense possibilities in encouraging creative work with young children.[36] In general the school organization and in particular the organization of the curriculum often serve to throttle rather than encourage individual creative effort. The project method and similar techniques are attempts to free the pupil for the furtherance of his own lines of interest. This need by no means be detrimental to the general effectiveness of the teaching. As a matter of fact, it takes some of the burden off the teacher.

[35] Percival M. Symonds, *Tests and Interest Questionnaires in the Guidance of High School Boys* (Teachers College, Columbia University, 1930).

[36] Hughes Mearns, *Creative Power* (Doubleday, Doran and Company, 1929).

4. Do not over-stimulate. A series of investigations by Hertel and others in Denmark, described by Hall,[37] demonstrated that it is possible not only to undernourish the minds of children but also to overnourish them. Poor sequence of topics, insufficient review, entire lack of drill procedure, and similar teaching defects which are thoroughly unpsychological, result in retroactive inhibition and amnesia, interference in habits, and poor learning. Frequent short examinations should be given to check carefully the extent to which pupils are able to follow with understanding the material which is being presented.

5. Observe the principles of learning. In Chapter X of this book an attempt is made to state these principles in their most intimate relation and value to the teaching process. Experimentation at the present time is being devoted primarily to determine the conditions which most favor learning. Some of the findings are reported in the chapter to which reference has been made.

6. Avoid unpleasant chance associations. The *Gestalt* school of psychology, particularly as it is expounded in its educational implications by Ogden,[38] has pointed out that the pupil is surrounded by a total situation and not by the single stimulus toward which it is hoped he will give attention. Sooner or later some sort of unpleasant situation is bound to occur. Teachers are often careless in allowing the pupil's annoyance responses to become associated either with themselves or with the subject which they are trying to teach. Then, in the future, annoyance and avoidance re-

[37] G. Stanley Hall, *Adolescence* (D. Appleton and Company, 1904).
[38] Robert M. Ogden, *Psychology and Education* (Harcourt, Brace and Company, 1926).

sponses which originally would never have been given either to the teacher or the subject are given to both, through having become conditioned stimuli for such responses.

7. Observe correct length of practice periods. In the past there has been a tendency to have practice periods too long. Convenience of the organization of the school program makes it advisable to have study hours the same length as recitation hours but this is based upon administrative convenience and not upon psychological experimentation. Having no formal study hours but merely one recitation period in which a portion is devoted to supervised study tends somewhat to obviate this difficulty. After a critical examination of experimental evidence, Gates has concluded that thirty minutes is about the correct length for most types of subject matter. He further concludes that the sixty-minute period is inadvisable in results produced.[39]

8. Practice in an environment similar to the later performance. This principle is well illustrated in the better laboratories and shops. In some schools, if one did not know the location, it would be difficult to determine whether the chemistry laboratory in which one found oneself were actually a commercial laboratory or a laboratory conducted in connection with the high school course in chemistry. The extent to which this similarity obtains minimizes the amount of relearning which will be necessary when the pupil makes the transition from school to society.

9. Have the pupil set his own standards. In recent years a feeling of dissatisfaction with grades and marking has sprung up. It is heard both in college and high school classes. It is particularly a cry against the fallacy of the absolute. It is a

[39] Arthur I. Gates, *Psychology for Students of Education* (The Macmillan Company, 1930), pp. 465–467.

cry against the stigma of the word "failure." Some school systems have done away with marks entirely.[40] Of course, grades can not be entirely obviated at the present time, but it is of advantage in the classroom situation to have the pupil measure progress in comparison with what he has done before and not in contrast with what a group of other pupils, perhaps of greater ability, have done.

10. Encourage a feeling of success. This principle can not be reiterated too often. Closely allied with the inaccuracies of the marking system and the unreliability which it exhibits are the effects of the feeling of inferiority when pupils fail. College students report that some one teacher in high school or grades has so thoroughly cowed them and destroyed their confidence that they have been totally unable to face a new subject with any degree of assurance. Sometimes it takes the best part of a semester to build up a feeling of confidence in such individuals and get them again to a state of readiness to participate actively in a learning situation.

11. Distinguish between the potential and functional phases of intelligence. In the discussion of the pedagogy of the subnormal and the gifted there may have seemed to the reader a tacit assumption that all students would be working to the limit of their potential abilities. It is well known that this is not the case. Some time ago Book showed that the correlation between intelligence and achievement, at least in school work, is comparatively low.[41] Granting that the available measurements of intelligence and educational achievement are not perfect and that correlations between

[40] Francis F. Powers, *Character Training* (A. S. Barnes & Company, 1932), pp. 140–145.

[41] W. F. Book, *The Intelligence of High School Seniors as Revealed by a State-Wide Mental Survey of Indiana High Schools* (The Macmillan Company, 1922).

ability and achievement might be raised by a more refined measuring instrument, the likelihood that it would be high is slight. This view is confirmed by studies which have included corrections for attenuation, various types of error, and other vitiations of data. Webb and Shotwell, in a discussion of the uses of standard tests in the elementary school, have noted that measurements of intelligence are not predictive of the use which will be made of it. This is true both qualitatively and quantitatively. Measures of intelligence do not tell how much mental work the individual will do or whether this mental work will be directed toward creditable or subversive ends.[42] Potential intelligence may be likened to sub-atomic energy. Both contain enormous possibilities, but both await a magic touch for realization of the same. Modern physicists are persistently endeavoring to release and utilize the hidden forces in the material world.[43]

The modern educator is engaged in a task similar to that of the modern physicist, for he is attempting to unleash the mighty forces of potential intelligence in the same way that the physicist is attempting to release the hidden forces in the material world. The need for this is apparent. For, of what social value is an intelligence, however profound, which never gains sufficient momentum to approximate its possibilities? It may be that master intellects have lived and died without making any substantial contribution to the betterment of the race or the improvement of civilization. Just as a physical mass may be said to increase with momentum,

[42] L. W. Webb and Anna M. Shotwell, *Standard Tests in the Elementary School* (Ray Long and Richard R. Smith, Inc., 1932), p. 49.

[43] For a vivid discussion of the philosophy of the modern physicist which emphasizes the surprisingly intimate relationship with the field of psychology, consult Sir James Jeans' *The Mysterious Universe*, revised edition (The Macmillan Company, 1932).

so also may the mental potentialities of the brain be said to accrue in force through function. The best method to activate potential intellects at present known is the stimulation provided by motivation.

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CHAPTER VII

TYPES OF TEACHING PROCEDURE

Aims of All Teaching Procedures

It has been customary to define the aims of teaching solely in terms of the learning process. The problems of methodology in the various subjects are so engrossing, the experimentation so ample and interesting, and the derived techniques so inviting that it may be said that peculiarly in the field of method is this temptation to an overly narrow definition of the objectives of teaching a real one. An expansive psychological view, however, of the nature and purposes of the teaching process and teaching procedures forces the relinquishing of a circumscribed concept of the aims of teaching and induces a description more correlative with general social purposes.

The foregoing does not imply that the utmost that can be done by the teacher in the direction of the improvement of the efficiency of learning is amiss. It is not inconsistent with the broad social purposes of education to hold that efficiency in learning is the primary objective of all teaching. In its learning aspect, the correct direction of teaching may have the following aspects:

1. *Facilitation.* Facilitation of learning is a primary goal of teaching procedure. As the social heritage grows by accretion throughout the ages both in gross bulk and in complexity, the young learner being inducted into a new world

and an intricate society is faced with an increasingly perplexing problem. Furthermore, it seems evident that social complexity is growing more rapidly than the comparatively slow biological evolution which affords the compensatory increase in individual ability and capacity. Consequently, progressive syncopation of the educational process with resultant reciprocal effects on teaching procedures is requisite. Unfortunately, this forced abbreviation comes into conflict with certain psychological conditions, not the least of which is the necessity for an experiential background for effective learning. Furthermore, as has been shown by the experimenters who have little faith in the automatic generalization of learning or large amounts of transfer, the experiences must be reasonably specific and similar to the final learning product which is the result. But experiencing takes time. The life of the individual is limited and the portion of it which is devoted to intensive learning is correspondingly brief. Hence the necessity for facilitation of learning. If there were only one fact in the world to be mastered, a nice inductive procedure could be developed for its mastery with all associated and concomitant learnings. Obviously this is not the case. Therefore one of the principal objectives of all teaching procedure is to facilitate the learning of a multiplying set of facts without allowing the learning to become mechanical or meaningless.

2. Simplification. One of the ways in which learning is facilitated is by simplification. In this connection, the notion that there exists an ascending hierarchy of difficulty, which begins with the concrete and ends with the abstract, and that all abstractions are difficult to master in direct proportion to their abstractness is probably erroneous. There are hundreds of "abstractions" meaningful within the limits

governing meaning which can be grasped by persons of comparatively moderate mental ability. Conversely, there are specific, concrete skills involving fine motor adjustment which are exceedingly difficult to master. The skilled surgeon performing a delicate operation is doing something as far or perhaps even farther beyond the grasp of many individuals than the understanding of many "abstract" statements.

Effective teaching procedure attempts to extract the prime factors from any conduct problem and to render them as clear and as comprehensible as possible for the learner. The objective of simplification is always the same, but the technique should be in terms of the type of problem and consist of definition, avoidance of obscure terminology, clarifying explanation, provision of experiential background or other similar aids.

3. Integration. Integration in learning leads to stability and meaning. An individual adjudged insane might exhibit conduct the elements of which were fairly sound but the arrangement so haphazard that the resultant would be meaningless. Integration is the common thread upon which the beads of conduct are strung. The phenomenon of integration has been the object of careful scrutiny by both physiologists and psychologists. Sherrington has carefully investigated the integrative action of the nervous system.[1] Burnham has over a period of years emphasized the importance of integration as a factor in normal conduct.[2] There are two principal elements in producing well-integrated learning

[1] C. S. Sherrington, *The Integrative Action of the Nervous System* (Charles Scribner's Sons, 1906).

[2] W. H. Burnham, *The Wholesome Personality* (D. Appleton and Company, 1932), p. 704. (The principles of normal conduct and the importance of integration therein will be discussed in a subsequent chapter.)

which are related to teaching procedures: first, well-planned work; and, second, well-defined goals. Teachers are often guilty of instruction which is so diffuse and so poorly planned that mental confusion on the part of the pupil and resulting lack of integration is a well nigh guaranteed result. But even carefully planned teaching may go astray of its purpose if the significance and pertinence of what is being taught are not clear not only to the teacher but also to the learner.

The Classification of Teaching Procedures

Many efforts on all levels of the educational system have been made to classify systematically types and methods of teaching. Earhart's "Types of Teaching," [3] Pringle's "Methods with Adolescents," [4] Sloman's "Some Primary Methods," [5] and Parker's "Types of Elementary Teaching and Learning," [6] are samples selected at random. Unless one wishes to argue that there is only one type of teaching expressed in one formula and all-encompassing in scope, it is appropriate to examine the various possible types of teaching and the suitability of each in attaining the aims of education. As in the case of the definition of the objectives of education, the tendency in attempting to distinguish a specification of teaching procedure seems to have been to center on devices rather than on psychological factors.

It is, however, possible to classify types of teaching pro-

[3] Lida B. Earhart, *Types of Teaching* (Houghton Mifflin Company, 1915).

[4] Ralph W. Pringle, *Methods with Adolescents* (D. C. Heath and Company, 1927).

[5] Laura Gillmore Sloman, *Some Primary Methods* (The Macmillan Company, 1927).

[6] Samuel Chester Parker, *Types of Elementary Teaching and Learning* (Ginn and Company, 1923).

cedure not only with special emphases upon method but likewise in terms of the psychology of conduct. With the latter as the criterion, teaching procedures may be judged psychologically by noting the following items:

1. Location of the activity emphasis or behavior stress. It requires no exact scientific technique or precise units of measurement to distinguish the fact that schools and classrooms differ widely when the differentiating criterion is the amount of pupil activity or perhaps, even better, the ratio between pupil and teacher activity.[7] Perhaps it would be more correct to adhere to Monroe's terminology,[8] and to say that the ratio between directed and forced pupil activity is the criterion. This is on the theory that the pupils will be active no matter what the teacher does, but the activity may consist of wild ramblings of the imagination while pupils are forced to sit quietly an undue length of time listening to the teacher lecture. The more recent demand is for directed and guided pupil activity. Rugg and Shumaker[9] emphasize this in describing the child-centered school but it is not an entirely new doctrine, for Hall early called attention to the necessity for paidocentric education.[10]

2. Type of association or conditioning. The general principle of conditioning is well known. That conditioning may be between not only "ideas," but that it also may involve emotional reactions is established. Teaching produces many types of association or conditioning. Some of these conditionings as in a learned motor skill are primarily muscular.

[7] M. J. Demiashkevich, *The Activity School* (A. G. Seiler, 1926).
[8] Walter S. Monroe, *Directing Learning in the High School* (Doubleday, Doran & Company, Inc., 1927).
[9] Harold O. Rugg and Ann Shumaker, *The Child-Centered School* (World Book Company, 1928).
[10] G. Stanley Hall, *Adolescence* (D. Appleton and Company, 1904).

As such, they become automatic with practice and occur as highly routinized serial responses when the original or conditioned stimulus occurs. Sometimes the association is a conditioned glandular or emotional reaction. This type is found in the "lessons for appreciation." Here again, the reaction is fairly automatic although more diffuse in nature than that given to stimuli where motor skills are involved. Finally, conditioned reactions may be primarily in terms of symbols. In this case the number of variables is usually greater and the response is less automatic, less easily predictable but in its final form fairly exact.

3. Amount of transfer expected. Psychological opinion on transfer of training or general discipline has undergone something of a cycle. The old notion of formal discipline in its more naïve forms led to a definite type of teaching procedure which was little, if at all, concerned with a wide variety of devices or an attempt to make a high interest appeal. With general training of the mind as the objective, curricular content became a matter of purely secondary importance. Experimentation which followed seemed to indicate little or no transfer and opinion veered over toward a theory of learning as highly specific connections. Recently, there has been considerable re-examination and re-interpretation of experimental data and there is at present belief in a considerable amount of transfer. Judd, for example, points out that James, though often cited against the theory of transfer of training, really believed in the doctrine of generalized experience.[11] Orata [12] has examined the theory of identical elements and finds about as much misinterpretation of

[11] Charles H. Judd, *Psychology of Secondary Education* (Ginn and Company, 1927), p. 424.

[12] Pedro T. Orata, *The Theory of Identical Elements* (The Ohio State University Press, 1928),

Thorndike as Judd finds of James. Actually, James, Judd, and Thorndike, as well as other leaders in the experimental attack on the problem of transfer, have been misunderstood, misinterpreted, and misquoted by overly enthusiastic advocates of one of the other doctrines. Re-examination of a large amount of the experimental material on transfer by Ferree [13] substantiates this view. In the light of present evidence and present interpretation, teaching can not revert to its former attempt at artificially formal discipline. On the other hand, teaching procedures need not be viewed as always a process of linking in a rigid way one specific response to one specific stimulus. Certain concomitant epiphenomena occur in varying amounts in all teaching. These concomitants may not be viewed as uncontrollable variables but they are factors in the mental hygiene and personality of the individual and should be taken into account whenever possible in the measurement of teaching products.

Factors Influencing the Kind of Teaching Procedure Followed

An architect may have a perfect set of plans for the construction of a fifty-story skyscraper. The plans may be practical, feasible, and accurate. But all architects know that a correct set of plans is only the beginning of the construction of a modern building. Excellent material must be had. Expert workmen must do the job. Good workmen will be handicapped by poor material and good material will be

[13] Edna Mae Ferree, *An Evaluation of the Present Status of Transfer of Training from an Experimental Standpoint* (Master's Thesis, University of Washington, 1931).

spoiled by poor workmen. Excellence of planning, material, and workmanship are necessary.

The plans of the builder correspond to the objectives of education. The material and workmen correspond to the pupils and teachers. It is as necessary in education as in building construction to have good plans, good material, and good workmanship. But the ideal can be approximated only. Defects and vitiations are bound to be present in all three stages of the complete teaching act. Certain frequently occurring factors which influence the kind of teaching procedure requisite should be noted:

1. Pupil ability. Even in theoretically homogeneously grouped classes, individual differences in pupil ability may be discerned. In spite of the fact that there are certain dangers inherent in an overly enthusiastic subscription to the concept of the normal distribution of pupil ability in its educational implications, it is conceded that raw ability, especially as it is described by the phrase "intelligence," is found distributed among individuals selected at random in a so-called "normal" fashion. Douglass has pointed out that this distribution of ability of recent years has increased in range because of the increases in high school enrollment.[14]

The common ground of agreement, however, appears to terminate with the recognition of the fact of individual differences. Equally eminent authorities are by no means in harmony in their views as to what the inferred teaching procedure should be. Terman after especially careful study of the gifted[15] feels necessary and recommends certain

[14] Harl R. Douglass, *Modern Methods in High School Teaching* (Houghton Mifflin Company, 1926), p. 462.

[15] Lewis M. Terman, *Genetic Studies of Genius* (Stanford University Press, 1925–1926).

cognate teaching procedures which will take care of those of superior ability, but with these recommended teaching procedures Bagley [16] finds it a little difficult to come into complete accord. It is necessary, therefore, to say that unanimity of opinions does not exist as to the most desirable line of teaching procedure and the recognition of all factors herewith being discussed.

2. Teaching personality. Reference has already been made to recent efforts experimentally to diagnose personality and conduct. The psychological phases of personality important in teaching success have been mentioned. The studies cited and other works of equal import are merely the beginning of the experimental attack on the influence which teacher personality exerts on teaching procedure. Wickman, who was quoted in Chapter V, has, for example, studied the influence of teacher attitude on children's behavior.[17]

3. Nature of the subject. There is evidence to indicate that the fundamental principles of learning applying in all subjects are the same and that teaching techniques, in so far as they employ these learning principles, are also similar. But when the actual teaching devices in the various subjects are considered, differences in procedure appear. For example, the type of motivating appeal necessary in laboratory and non-laboratory subjects is different. Woodring and Sabin's "Enriched Teaching of Latin in the High School," a source book for teachers of Latin, and the whole Enriched Teaching Series of which this volume is one, illustrate possibilities in several subjects.[18]

[16] W. C. Bagley, *Determinism in Education* (Warwick & York, 1925).

[17] E. K. Wickman, *Children's Behavior and Teachers' Attitudes* (The Commonwealth Fund Division of Publications, 1929).

[18] Maxie N. Woodring and Frances E. Sabin, *Enriched Teaching*

4. Educational facilities. There is educational material such as the school plant which, although not in itself psychological in nature, must be considered because of the effect which it produces psychologically. Granting for the sake of argument that competitive commercialized athletics are justifiable in the high school and college, it is difficult to secure a successful psychological set with poor equipment. Merely having or not having a good football field sometimes represents the difference between an interest in football and a good team or the reverse. The same principle holds true in the school subjects. There is truth in the old saying that the essence of good schools is found in men and not in buildings and books, but the organization of the modern educational system requires adequate facilities in the same way that the organization of modern building trades demands sound material.

5. Social demands and the objectives of education. Education is one form of social control. Its potentialities as a form of social control are just beginning to be realized. But society also controls education. The process is strictly reciprocal. This is not a theoretical and abstract principle. Many studies of the failures of teachers and administrators offer ample evidence that teaching procedure which is unresponsive or insensitive to not only the more diffused national tempo but more particularly to local rhythm has resulted in disastrous failure. Correct adjustment is a problem in social psychology.

of Latin in the High School (Bureau of Publications, Teachers College, Columbia University, 1930).

Psychological Factors in Types of Modern Teaching Procedures

1. The recitative procedure. The textbook-recitation method, particularly in some of its more lackadaisical forms, has of recent years fallen under a cloud of disrepute. Students of pedagogical method, though not universally condemnatory, have criticized the traditional recitation procedure sharply. Douglass lists the following as typical defects:

(a) Lack of coöperative effort
(b) Failure to develop pupil responsibility
(c) Perfunctory school work
(d) Pupil-teacher relationship
(e) Insufficient opportunity for training in initiative, originality, and judgment
(f) Lagging interest and attention [19]

There can be little doubt that the textbook-recitation as it actually exists in many schools is as poor as it has been painted by its critics; but criticisms of this method are not invariably based upon psychological considerations. Rather these criticisms tend to stress the failure of the textbook-recitation method, especially when incorrectly employed, to contribute to pupil personality and character development. This is brought out by Douglass' discussion.[20] No brief is presented for the textbook-recitation method. No effort is made to elaborate the minutiæ of its technique. The attempt herein is to examine this and certain other modern methods of teaching from the psychological standpoint and to attempt to evaluate their potentialities. This being the case, it should be noted that some of the criticisms of the textbook-recitation

[19] Douglass, *op. cit.*, pp. 241–248. See also Vivian Trow Thayer, *The Passing of the Recitation* (D. C. Heath and Company, 1928).
[20] *Ibid.*, p. 247.

method are not so much indications that the method is psychologically unsound from the standpoint of learning, but rather, either because of the stagnation of traditional usage or because of the intrinsic difficulty of handling, that this method is actually failing to produce motivated learning. This type of criticism is possible of explanation in terms of teacher-shortcomings as well as methodological inadequacy. It may, of course, be contended that the teacher and the method are inseparable but this assumption does not validate criticisms of any method.

It may be that the same care exerted upon the refinement of the textbook-recitation method as has been spent in devising new methods would lead to marked improvement.[21] Psychologically the method has much to commend it. For, if teaching, at least from the purely psychological standpoint, is nothing more than the scientific control of stimuli, then the recitation method measures up to psychological requirements. A well-written text takes the learner through a systematically organized body of information. In geometry, for example, with the average student, this type of training is valuable. It provides certain elements of disciplined thinking necessary in the development of individuality.

Psychologically, the following facts may be noted regarding the textbook-recitation method:

a. It is an acceptable method for beginning teachers, or for teachers who are handling subjects beyond the realm of their specialities. One of the objections to some of the "progressive" methods of teaching is that, although in the

[21] See William C. Bagley, "The Text-book in American Education," *School and Society,* XXXIII, 356–360 (May 14, 1931). Also "The Text-book and Methods of Teaching" by the same writer, National Society for the Study of Education, Thirtieth *Yearbook,* Pt. II (Public School Publishing Company, 1931), Chapter II.

hands of an expert teacher they give excellent results, in the hands of beginning or inept teachers chaos may result. The project method gone wrong, for instance, is fully as distressing as a dragging recitation lesson.

b. The textbook-recitation method does not always emphasize rote memory. A subtle questioning technique, whether the questions be based upon the textbook or not, provides plenty of opportunity for practice in original thinking, training in organizing one's thoughts before a group and in originality of expression. Because the lesson is based upon a portion of a textbook is no reason to suppose that questions must be upon only the facts treated in the textbook and that the answers must always be in the words of the textbook.

c. Motivation is not necessarily inherent in any method. There are many types of motivation. For example, it is usually assumed that the textbook-recitation method implies that the teacher asks the questions. This need not be true at all. Pupils may take turns conducting the class under this method. This technique, which has been used successfully, often provides ample training in initiative, responsibility, etc. In this case as in the case of other theoretically better methods, the motivation has been secured by the introduction into the situation of certain other factors which are exterior to the learning itself. The point is not that motivation does not affect learning, but that the psychological mechanics can not be judged solely in terms of the motivating mechanism.

d. From the psychological point of view, any omnibus method is open to certain criticisms. Methods of teaching as well as methods of study must be selected with several considerations in mind. Certain assumptions underlie the

advocacy of any method. To say that the textbook-recitation method is uninteresting is no criticism unless one assumes, first, that teaching methods should be interesting and, second, that the greatest amount is always learned when interest is present. All methods depend upon the objective of learning. If some one offers ten thousand dollars as a prize to the person who can quote the most lines verbatim after an hour's study of a book of five hundred pages, the method of study would be different for those competing than if the prize were for the one who could give the best summary of the whole book.

2. Supervised study. Supervised study as a teaching procedure has excellent psychological foundation. For learning to be effective, it must not only be focused upon a subject continuously but must also be facilitated when the difficulties become too obtrusive to be surmounted by the learner unaided. The supervised study plan is of value in both instances. Unlike the old "study period" which might, and frequently did, result in random and aimless activity or waste of time, the correctly supervised study period furnishes unobtrusive but ever present assistance. The style of study hall in which one teacher attempts to keep order with a group numbering hundreds and also strives to assist each individual with difficulties can scarcely be regarded as a highly efficient method of directing learning.

Most types of learning require practice. Even when insight is present and the act is performed correctly the first time, at least in so far as the accomplishment of its final objective goes, further practice is often or usually necessary to speed up and smooth the reaction. According to Dewey, directed practice which is so necessary in deriving well-authenticated knowledge is conspicuously lacking in social

situations.[22] As the point which Dewey makes is reasonable, it may be said that directed practice in the form of supervised study is happily one of the places in which this technique is present in a social situation.

Palmer discusses the following phases in directing learning. They are all psychological or partially psychological in nature.

(a) Providing, setting up, and directing learning activity
(b) Focusing pupil's attention on individualized learning activities
(c) Facilitating learning by visual aids, etc.
(d) Diagnosing and testing [23]

Important among the above is the individualization of the learning process. Psychologically, this is of moment. There are several devices commonly used and thoroughly acceptable which are calculated to individualize learning in the actual recitation process. Regardless of the subtlety of such devices, however, there is a rather narrow limit within which individualization in the reacting group as a whole must be confined. Real individualization of instruction comes during the time that the pupil is studying and is encountered in representative form in the well-conducted supervised study period. Rigid sectioning on the basis of intelligence has been called into question recently on psychological grounds entirely apart from the ability of the school or the community to conduct such sectioning. The objections raised need not be mentioned here in detail. The important fact from the standpoint of the psychology of method is that, in communities where section-

[22] John Dewey, *The Quest for Certainty* (Minton, Balch and Company, 1929), Chapter IX, "The Supremacy of Method," p. 251.

[23] Anthony Ray Palmer, *Progressive Practices in Directing Learning* (The Macmillan Company, 1929), Chapters I–X.

ing of classes on the basis of intelligence is not possible or subscribed to, the function of recognizing individual differences is thrown back upon either the recitation, whatever be its form, or the study group. As a result, many schools are adopting the divided period plan with part of the period devoted to supervised study and the remainder to recitation.

The question arises as to whether the supervised study part of the divided period should come first or last. Psychologically there is something to be said for both placements. If the supervised study period comes first the law of recency is likely to operate and, providing the assignment has been reasonable in length, the recitation is more apt to be a lively one. Yet, the forgetting is likewise likely to be more rapid since pupils, realizing that the recitation will immediately follow the study, may fall into the habit of learning material only sufficiently well to be able to recite within the hour. When the recitation follows the supervised study period, the teacher is afforded an opportunity of testing and explaining and clarifying difficulties soon after they have occurred. This prevents waste of time by the pupils and allows immediate succession of ideas. The advantage of having supervised study terminate the period is that the recitation may be used to lead up to the study and motivate the same.

The psychological considerations concerning the supervised study may be summarized as follows:

a. Supervision should contribute to the facilitation of the learning process. Care must be exercised in this facilitation. There is a tendency to give students too much help, even to the point of actually doing work for them. But this seeming solution of difficulties is of short duration and eventually leaves the learner worse off than before.

b. Supervised study periods should be neither too long

nor too short. Experimental evidence seems to indicate that half an hour is a good length for a study period.[24]

There is evidence that a tripartite period consisting of a short review study period at the beginning in which students review what has been studied the day before in school or at home, a recitation, and a supervised study period following the recitation might be effective in promoting learning.

3. The problem method. One of the traits necessary, at least theoretically, for effective democratic citizenship is the ability to assume individual responsibility and to think independently. A major charge leveled against the schools on psychological grounds is that they do not so train children but rather turn out graduates who are acquiescent robots rather than keen individualists in the realm of thought.

Observation seems to show that, roughly speaking, the amount of thinking which an organism does is inversely proportionate to the ease of its existence. Thinking is most likely when conduct lines are crossed or blocked. Thought takes place when a problem is present. Therefore, the psychological organization of the school should provide vital problems. The mental process resulting when a problem is encountered has already been discussed in Chapter III in the treatment of mental functions. It is the purpose herein to examine a few of the implications in the facts noted.

a. The problem must be recognized as real by the learner. The proximity and concreteness of the issues involved are factors with young learners. Teleological considerations are of small import to children on the secondary level of education. Even in colleges and universities the proximity of the problem has an important bearing on

[24] Arthur I. Gates, *Psychology for Students of Education* (The Macmillan Company, 1923), p. 286.

the amount of pressure which is exerted upon the learner. It is probably of more practical effect to tell a candidate for a teaching certificate that a course in methods is necessary to secure that certificate and that the certificate is necessary to teach than to attempt to describe the ultimate advantages of a course in methods in becoming a finally successful teacher. It is probably more effective to tell an eighth-grade boy that he must have his mathematics before he can graduate from the eighth grade and that he must graduate from the eighth grade before he can enter college to take a course in engineering than to attempt to demonstrate that this course in mathematics will be of value in some remote and distant college course. In other words, the reality of the problem is not infrequently to be judged in terms of the pupil's reaction to it regardless of ulterior criteria of validity. If the problem does not seem real to the student, it is not real for all pedagogical purposes. Psychologically from the standpoint of the method here under consideration teaching consists in raising problems which satisfy not only the demands of John Dewey and others that school work bear some functional relation to actual social activity, but also that these problems seem necessary of solution to the learner himself.

b. The mere fact that what may be termed psychological problem-solving thinking is present in a pupil's conduct is no guarantee whatsoever that the conduct which is being exhibited is desirable socially. Psychology is not the science of social ethics. Neither is it the science of individual morals. The psychologist is primarily interested in explaining the *mechanics* of conduct. Therefore, it is necessary to indicate that the psychological requisites of a method may be satisfied without any guarantee that the method is

producing orthodox social results. For example, Johnnie is late to school. He has been playing marbles. He is kept after school as punishment. Being kept after school interferes with his projected post-school activity. This is a form of blocking. It calls for some thinking. The result of the thinking is a fabrication. The next morning, Johnnie, being again late because of marble-playing, says that he is tardy because of the sickness of his mother and the fact that he was forced to stay at home for a little while to help her. This yarn produces the desired result. For a time at least, Johnnie is not kept after school by a teacher who admires the boy's manliness. Thousands of similar incidents occur. In all there is evidence of need, not only for progressive conduct but also for progressively directed conduct. For problem-solving thinking in conduct must conform in its finality with both psychological and sociological norms.

c. To attain the goal of progressive conduct by the problem method of teaching, problems must be successively interrelated. It is difficult to provide a separate extrinsic motivation for every problem which confronts the learner. Artificial rewards may be effective but they tend to become cumulative and out of proportion to the activity motivated. It is much better to have the problem present a dual aspect, one phase of which is the immediate dilemma the solution of which is merely a step toward the encompassing of the final obstacle. For example, suppose that a father believes that it is desirable to have his son each evening chop the firewood for the next day. There is no evidence to believe that chopping firewood, except perhaps in the case of individuals who may be freezing to death, is a universally satisfying phenomenon. So the father offers his

son a dime the first night that the boy chops the wood. The boy's problem, of course, is to get the dime. The method is to chop the wood. But the second night, on being asked to chop the wood, the boy demurs and the father raises the inducement to twenty-five cents. This may go on and on until the reward for the solution of the problem is entirely out of proportion to its difficulty. Parents' and teachers' problems alike become less when the satisfaction resulting from solutions is inherent in the activity or conduct itself. The previous discussion on the nature of proximate goals or problems must not be understood to mean that an effort should be made to keep goals always proximate. For the opposite is true. Motivation through the learner's desire to overcome some problem or obstacle should rise to successively higher levels. When the individual reaches the stage where he is actuated by relatively abstract and relatively idealistic problems such as the betterment of mankind through the discovery of devices to lessen pain, then continuous motivation is guaranteed. Problem teaching in the school should do much, not only to set up proximate difficulties, toward the solution of which the learner may be fired, but also to indicate as early as possible more general goals of socially significant nature.

4. The project method. One of the chief dangers of the problem method, especially when a series of discrete and unrelated problems is considered, is the lack of continuity and relationship. The project method presents an element of progressive sequence which is not to be found in the ordinary discrete problem. In addition, it serves to "bring knowledge close to life" as Bagley has aptly said.[25]

[25] John Alford Stevenson, *The Project Method of Teaching* (The Macmillan Company, 1921), editor's introduction.

The four general aims of the project method have been stated by Stevenson as follows:

(a) Development of reasoning instead of memory for information.
(b) Development of consciously deliberated conduct instead of information for its own sake.
(c) A natural setting for the learning instead of an artificial setting.
(d) A priority of the problem as against the priority of general principles.[26]

All these aims of the project method might be paraphrased in the following expression, "reasoned conduct solving a real problem in a natural setting."

It has sometimes been assumed that the project must involve a preponderance of overt behavior. Without consisting of mere memory for information, information for its own sake, or abstract principles slavishly memorized, this need not be true. Psychologically, it is entirely possible to have a mental project followed through in a natural setting with but little overt behavior. This is easily seen when one bears in mind the relation between language and thought as developed by such writers as Perrin.[27] Language is symbolical conduct. As such, it is used in the solution of problems. Psychologically the main requisite of the project which is solved through the use of symbolic conduct, language or thinking, is that such symbols are backed by and based upon actual experience. If this is the case, it is possible in the literal sense of the word to project oneself into a future situation, solve the problems therein presented and base future action upon such solutions. It is not necessary in this discussion to decide

[26] Stevenson, *op. cit.*, p. 4.
[27] Fleming Allen Clay Perrin, *Psychology, Its Methods and Principles,* revised edition (Henry Holt and Company, 1932), p. 267.

whether such projection is always in terms of vocalized words, or whether it may likewise be conducted by imagery. This point has been discussed at length elsewhere.[28]

Psychologically the project may be viewed as an elaborated type of problem teaching. With younger children whose attention span is limited it is relatively difficult to maintain interest in conduct directed toward a distant goal. Teaching almost surely must consist of the execution of simple tasks and the exhibition of simple forms of conduct. The psychological nature of the learner requires this. As the learner matures, however, and his experiential background becomes more ramified, it is possible to expand the problem into a project. Thus the project does not differ from the problem except in extensivity.

The following points on the psychological use of the project method should be observed:

a. The project may be either for the class as a whole or for individuals. If a project is for the class as a whole, care should be taken that all pupils have an opportunity to contribute to the solution.

b. The project may be used to develop individuality. Individuality, however, is not an unvarying accompaniment of the method. For instance, when the Daltonian contract is followed it is possible for a pupil to acquire the habit of wasting time. The apparently more flexible and easy-going modern methods of teaching actually require greater attention and subtlety on the part of the teacher rather than more arbitrary procedures.

c. The emphasis of the project method is psychological and not mechanical. As such, the supervision of learning

[28] Sidney Adams and Francis F. Powers, "The Psychology of Language," *Psychological Bulletin,* XXVI (1929), 241–247.

should concentrate upon psychological and not upon mechanical points. During the course of the learning the important thing is not the final product but the development in the learner of attitudes and techniques. This is one of the values and interests of the project method. It stands in direct contrast with emphasis upon immediate accuracy of detail. Yet, it is by no means the antithesis of Morrison's point of view which stresses accuracy and mastery.[29]

The difference between teaching by the project method and teaching by a deadeningly routinized process is a difference in emphasis. In the project method the process of function is emphasized whereas in a piece-meal method the product or structure is emphasized. No plea is here made for the easy tolerance of error; but it is possible to kill interest and initiative by over-attention to routine details. When conducting a class of advanced pupils whose work is entirely project in nature, the expert teacher, in making comments upon the performance of pupils, frequently if not usually leaves until the last comments on downright inaccuracies. These are not omitted entirely, although when the pupils are fully aware of the faults this may be the case, but the emphasis is upon the success of the project as a whole and not upon the details. It may be contended that the success of most projects in life depends upon the accurate execution of detail as, for example, the need for good blocking and tackling in a football game. This is true, but the point herein argued is that details of conduct should not be over-emphasized in a psychologically sound method for, if such be the case, the interest of the learner may be lowered.

5. Socialization. It will be remembered that social compe-

[29] Henry C. Morrison, *The Practice of Teaching in the Secondary School* (The University of Chicago Press, 1926), p. 79.

tence has been defined as the ability to react intelligently to external social stimulation and to stimulate similar conduct in others. Social competence is a requisite in one's adjustment to his environment. Like many psychological situations, however, it can not be stated in terms of formulæ but must rather be described in terms of tendencies and principles. As pointed out recently "strategy in handling people" as a phase of social competence is of the utmost importance, at least in determining one's economic status in the world.[30]

The infant is egocentric or self-centered. Its training tends to accentuate rather than diminish this egocentricity. Fiske has emphasized the plasticity and helplessness of the human infant.[31] The long period of helplessness of the human infant may have its advantages in terms of learning capacity, but it likewise has its disadvantages in its augmenting of self-centered reactions. This is not true throughout the animal kingdom. The offspring of some animals never see their parents but take their places in the world fully responsible for their own existence from the day of birth.[32] On the contrary, the human infant's conditioning consists largely of the acquisition of devices to secure attention and comfort. The child's genuine cry of distress becomes associated with an ensuing satisfactory state of affairs and soon genuine cries of distress are interspersed with pseudo-distress signals. Overstreet has described the genesis of this type of behavior in detail.[33] Some children never outgrow these naïve devices,

[30] Ewing T. Webb and John B. Morgan, *Strategy in Handling People* (Garden City Publishing Company, 1930).

[31] John Fiske, *The Meaning of Infancy* (Houghton Mifflin Company, 1909).

[32] Friedrich Alverdes, *Social Life in the Animal World* (K. Paul, Trench, Trubner and Company, 1927).

[33] H. A. Overstreet, *Influencing Human Behavior* (W. W. Norton and Company, 1925).

particularly when they are too well protected from a socializing environment. Thus, there are children at the high school or even the college level who depend upon lachrymose or hysterical demonstrations to secure ends which could more properly be reached by somewhat more laborious routes.

The child enters the school in an unsocial, if not an antisocial, frame of mind. The task of the school, which it begins immediately, is socialization. This socialization takes place in a number of ways. Contact with schoolmates, the classroom environment itself, the directing influence of the teacher, and the general organization of the school are all phases of the socializing process. Psychologically the recitation is an excellent place for socialization to occur. But to promote socialization the recitation must be socialized. In spite of the fact that the class is a social group, a recitation may be individualistic. The weaknesses of the individualistic recitation both in terms of content mastery and socializing value have been pointed out by Robbins.[34]

The socialized recitation should embody the following psychological elements:

a. Fairly uniform pupil reaction. As in the case of the class where the teacher is in absolute control, so also in the socialized period, will certain students tend to dominate the situation. Socialization is not a passive but an active process. No student gains social competence from sitting and watching other students dominate the situation. Devices by which equality of reaction can be secured are numerous. A rotation method of assuming some responsibility in the class conduct may be used. The teacher may indirectly but effectively take care that each student is

[34] Charles L. Robbins, *The Socialized Recitation* (Allyn and Bacon, 1920), pp. 1–12.

given an opportunity to react. It must be borne in mind that the main value of the socializing technique lies in the fact that, properly used, it reaches the whole group. The aggressive, "extrovert" minority will become socialized in any case.

b. Full use of the socialized recitation should be made not only to secure unanimity of participation in recitation but also to inculcate many social amenities as well. Robbins has commented on the fact that noise and confusion may become the outstanding characteristics of this method.[35] Although possibly this may be the case in the early stages of the socialized period, it should in no sense be true of the final result. Otherwise, an opportunity has been passed to secure courtesy values fully as great as pupil autonomy in recitation periods.

c. The purpose of the socializing technique should be rationalized by the pupil or, at least, to the pupil. Socialization can not be secured merely by turning a class loose to drift as it pleases. Even among adults the distinction between liberty and license is not completely clear. It is even less clear with adolescents. The lesson to be gained, namely that individual freedom of conduct carries an implication of social responsibility, can be gained by a long process of auto-inductive experience, but the acquisition may be quite as efficient and somewhat less painful and time-consuming when the result of direct socializing training.

6. Laboratory methods. It has long been recognized that education is a *doing* process. Learning is active, not passive. Abstractions, to be fully understood must be built up through a variety of experiences with concrete situations in detail.

[35] *Ibid.*, p. 67.

Upon the learner's own activity depends his acquisition of knowledge rather than upon his ability to sit quietly exposed to the hollow verbalisms of the teacher. All this has been accepted and fairly well verified experimentally since the times of the more enlightened philosophical pedagogues.

This belief that education and progressive conduct are the result of pupil activity led naturally and soon to an emphasis upon laboratory work. The connection is obvious. In the laboratory the child actually is doing things. The fact that he makes some mistakes is not a matter of paramount concern in inductive laboratory work. Thus in the chemistry laboratory the student is actually doing things with chemicals. This doing of things makes the genetics of knowledge meaningful to the learner. It provides sensory background of a concrete nature upon which later generalizations and laws may be based.

But unfortunately, psychologically sound though it seems at first glance, the laboratory method has not proved as valuable in all respects as it was at first hoped. Experimental observations under fairly well-controlled conditions do not in all cases show advantages as against some other procedures. This failure of experimental observation to justify the laboratory method taken in conjunction with the fact that laboratory equipment is often the most expensive part of the school's plant has tended recently to diminish interest. To continue the example of chemistry, for instance, it has been found by such investigators as Anibal, Carpenter, Downing, Gould, Horton, and others that under certain conditions a lecture demonstration method may prove valuable.[36]

[36] Fred G. Anibal, "The Comparative Effectiveness of the Lecture-Demonstration and the Individual Laboratory Method," *Journal of Educational Research*, XIII (1924) pp. 355–365; W. W. Carpenter, *Cer-*

One reason that the laboratory method may not be as successful as would at first thought seem probable is that in the average high school laboratory course, so many experiments are attempted that nothing can be done thoroughly. In many courses in high school physics, for instance, it is attempted to have the class perform practically all of the classic experiments in the field. This results in the physically inept bungling through a series of experiments the meaning of which is never entirely clear. As the social heritage becomes greater and greater it will probably become more and more necessary to reconcile oneself to the learning or teaching of increasingly condensed information. To induct each learner into each realm of knowledge through a completely activated process would require inordinate amounts of time. All would be well, at least as far as desirable information is concerned, if that which is desired by one group or individual could be passed on by the process of biological inheritance to the next generation or individual. Unfortunately this does not seem to be likely. It is therefore necessary to take a learner who begins with exactly the same sort of biological equipment which beginners had thousands of years ago and to review either by reënactment, as in the case of the laboratory process, or vicariously the increasingly elaborated conduct in each subject. Commendable therefore as the theoretical aim

tain Phases of the Administration of High School Chemistry (Teachers College, Columbia University, Contributions to Education, 1925, No. 191); E. R. Downing, "Summary of Investigations of the Demonstration Method vs. the Laboratory Method," *High School Journal*, 1930, XIII, pp. 51–55; E. R. Downing, "Methods in Science Teaching," *Journal of Higher Education*, 1931, II, pp. 316–320; A. B. Gould, "Demonstration Experiments and Their Place in the Teaching of Chemistry," *Journal of Chemical Education*, VIII, 1931, pp. 297–302; R. E. Horton, *Measurable Outcomes of Individual Laboratory Work in High School Chemistry* (Teachers College, Columbia University, Contributions to Education, 1928, No. 303).

in laboratory procedure may be, it is doomed to increasing failure unless laboratory work is confined to restricted and selected sections of the main field.

It would be an incorrect psychological assumption to believe that the laboratory method is the only way in which learning may be made vivid. The primary function of the laboratory method is to provide sensory data upon which general principles may be based. There are other ways in which this may be done. The teacher-demonstration method just cited provides sensory avenues through which concrete information is gathered. Any provision which accords multisensory experience is valuable. It is undoubtedly this fact which accounts for the recent emphasis upon visual education.

To be psychologically sound, the laboratory method should make allowance for the following:

a. Clarity: The relation of activity exercises to the general subject should be evident at all times to the learner. The laboratory should serve as a preparation for class discussions. The relationship between the material covered and theoretical discussions should be clear.

b. Simplicity: Children even at the high school level are not noted for dexterity. Some laboratory exercises require considerable manual skill. Demonstrations which are delicate or dangerous are probably better handled by the teacher-demonstration method. In this connection, it may be said that a combination of the two methods is often effective. Children often like to repeat an experiment when they have once gained a good notion of how it should be done through watching the teacher.

c. Brevity: Some experiments extend over too long a period of time and require too elaborate a technique of

data selection and treatment. Wherever possible, experiments should be designed to be completed within the limits of the laboratory period. This need not be true at the college level or for those who are planning to become experts in the particular laboratory technique which is being studied. Overly long laboratory exercises, however, tend to lose their pedagogical significance which is to clarify and emphasize learning.

d. Interest: One function of the laboratory exercise is to motivate. Exercises which require a long, laborious, minute technique or data in elaborated detail do not serve this purpose. While the laboratory period is in no sense a play or recreation period and should not be allowed to result in wasted time as is sometimes the case, it should not kill the student's interest by a heavy monotony of detailed routine.

e. Coöperation: There is much opportunity for furthering social competence in laboratory periods. Many experiments are coöperative in nature. Fundamental steps in subsequent industrial coöperation can be laid at this time.

7. The teaching of æsthetic experiencing: Aside from such items as difficulty, abstractness, etc., subject-matter content may be analyzed in psychological terms from the standpoint of affective effect upon the learner. In some subject matter such as the learning of the multiplication table, mastery only is essential. It requires comparatively little emotional insight to attain mastery of this type of content. Other subject matter is to be "appreciated," that is, a "value" is placed upon it. In the first type, the pedagogical technique may be drill leading to habit formation. In the second, routine drill may be harmful.

Æsthetic experiencing, however, is not an entirely innate

process except perhaps in some of its fundamental elements as, for instance, the glands as the basis of emotional coloration. Neither is appreciation a mysterious process consisting of a totally unanalyzable feeling of admiration for some form of creative expression. With regard to the first instance, it is doubtful if there is hereditary foundation for many of the traditionalized artistic forms such as curved lines and third intervals. A previous discussion of æsthetic experiencing has indicated some of the features pertinent to the nature of the appreciational process. In æsthetic experiencing the actively anticipatory phase of semi-creative appreciation is observable.

The statement that the mastery of content forms involves scant creative activity or appreciative behavior should not be interpreted to mean that any subject is entirely lacking in appreciational value particularly when pursued consistently. That a rather wide differential between subjects in the matter of appreciational possibilities does exist can not reasonably be denied. Appreciation as found in all subjects is inclusive of the following elements:

(a) Experiencing
(b) Knowledge
(c) Emotional orientation

Any object, situation, or product entirely and completely novel would probably be difficult of appreciation. A "new" musical composition is liked or appreciated because it contains familiar elements. Novelty of combination excites the response. Experience then leads to knowledge. Knowledge leads to certainty. Certainty leads to appreciation.

The nature of the part which emotion plays in appreciation is somewhat more difficult to analyze. It is highly probable that the emotional elements of an appreciational reaction are

the result of conditioning. For example, one is at a musical concert. The evening has been an enjoyable one. A good dinner, intelligent and amusing companions, seats reserved in advance, no traffic difficulties have all been concomitants augmenting the actual appreciation of the concert itself. It is impossible to omit this element of feeling-tone from a discussion of appreciation because all the intellectual experiential elements may be present and appreciation still be lacking.

The feeling-tone strain in appreciation need not be a pleasant one. The statement, "I appreciate your position but still feel constrained to reject the manuscript," implies that the speaker has arrived at an intellectual evaluation of the situation but that the feeling-tone is negative.

The appreciation lesson is not an easy one to present. It should be:

a. Natural: Above all, appreciation is a spontaneous process, spontaneous not in the sense of having no origin but with the connotation of conduct in an unforced situation. One may say, "Listen to the music," "See the picture," and more or less readily secure a response. One may not say, "Appreciate the music," "Appreciate the picture," etc., and secure so ready a response.

b. Rational: The contention that appreciation should be rational does not mean that one should carefully calculate that a certain situation should be appreciated and then proceed to appreciate it. It does not take the element of interest or uncertainty or feeling from appreciation. It does imply that appreciated or valued responses are upon a sensible rather than upon a mystic basis.

c. Active: The point has been stressed that appreciation is not a passive process. Therefore the person who is do-

ing the appreciating must contribute something to the general situation. It is a truism that a value is placed upon those things for which effort has been exerted. This being the case, participation of some kind or other becomes a necessary component of the appreciational process. When one says, "I appreciate what you are up against," the meaning is not necessarily only that there is an intellectual understanding of the magnitude of the problem involved but also that there is an emotional empathy based upon previous active experience of a similar sort.

d. Subjective: No matter how many efforts are made to analyze appreciation psychologically or sociologically, the reaction itself will always remain a covert experience peculiar to the individual himself. The nature of this experience may be explained in terms of previous experience, direction of desire, general emotional matrix, etc., but the composite factors are so numerous as to make standardization of external reaction or expression difficult. Therefore, psychologically, so-called tests of appreciation can be tests either by name or definition only and only upon restricted phases. In a class for the appreciation of English poetry it is permissible to ask students what they have enjoyed about a given poem or why they have enjoyed it. It may even do no harm to secure naïve introspective reports from the pupils as to the emotional reactions which were aroused by literary compositions or other appreciation-eliciting subjects. The minute, however, that any one is put on the defensive and asked to justify his appreciation, the finer essence of it vanishes. This is particularly true in æsthetic and emotionalized appreciation when the personality of the teacher may dominate the class or individual child to such an extent that a careless criticism by the

teacher of a pupil appreciative-reaction may kill interest in the whole subject.

8. The drill procedure. One of the cornerstones of classroom procedure is drill. It is found in many forms. It is used in varying amounts by different teachers. But in all schools drill has its place and so established is this place in many that one might almost term them "drill schools."

The use of drill as a teaching technique is based upon the assumption that repetition of a function tends to fixation. This may be restated by saying that the more often a reaction pattern functions the easier its action becomes. This is a well-known principle of learning and will be discussed in Chapter X.[37]

Although psychologists are not universally agreed that a trial-and-error or repetitive process is necessary to discover solutions and fix the learning product in all cases, nevertheless, it *is* generally admitted that in many cases practice through repetition must occur.[38] Therefore, it is of advantage to examine the psychological nature of drill and the manner in which drill may be most effectively carried on.

Drill is traditionally difficult to motivate. No matter how well disguised, drill is bound to consist of more or less monotonous repetition of the same material. Interest is not the essence of monotonous repetition. Furthermore, in many schools, even in functions where drill is proper and necessary, the way in which it is used makes it doubly deadening. Even though drill contains few intrinsic elements of interest it is yet possible to attach it to factors which relieve routine. An example of the way in which a monotony of drill may be

[37] Edward L. Thorndike, *Educational Psychology,* Volume II (Teachers College, Columbia University, 1921), p. 2.

[38] Wolfgang Köhler, *The Mentality of Apes* (Harcourt, Brace and Company, 1927).

relieved is the use of games in modern foreign language teaching. Many teachers consider these games frivolous, futile, and time-wasting. This is not true. For, although the class in which a game is being used may not seem to be so orderly as the routine drill class, nevertheless, the gain in motivation through the use of such games, for children become excited during the course of them, more than compensates for the time lost. The same is true in other subjects.

Not only must drill be motivated as well as possible in view of its unexciting nature, but almost more than in any other type of method must attention to individual differences be carefully given. On the assumption that many classes are not homogeneous groups and that many schools are not able or do not wish to use homogeneous grouping, this is especially requisite. Classroom organization must be flexible enough to take cognizance of psychological differences in pupils. To feel that all students need five, ten, fifteen, or more repetitions of a given content is erroneous. There is no quicker way to raise the disciplinary problem than to keep students drilling in an monotonous fashion upon material which they feel they have already acquired. The psychology of learning teaches that practice beyond the threshold of merely being able to perform a function is valuable in fixing that function permanently. But frequently in actual practice the loss in classroom morale and individual pupil interest more than offsets this. Therefore, interest should be maintained in drill by the methods mentioned in the previous paragraph and when a pupil has mastered the activity reasonably well beyond the threshold of mere performance, routine drill upon it should be eased off. From this particular standpoint, the old monitorial system had much to commend it, because under this plan those who could learn quickly were allowed

to teach others in a sort of semi-socialized procedure rather than to fritter away their time waiting for slow members of the class to catch up or causing trouble to the teacher.

Drills should be systematically distributed. Some classes unfortunately bunch drill periods in the way that some college students bunch their study periods during a quarter. Efficiency of practice or drill does not depend entirely upon the mere length of time which is expended. It depends likewise upon the distribution of this time. Well-written textbooks in subjects in which drill is a necessity usually have drill procedures incorporated in almost every lesson. These should be faithfully followed, although they are too often skipped. To take up new material too rapidly for too long a period of time and then to attempt to get in drill necessary on this material in a tiresome and concentrated "review" a week before the end of the semester is not good psychological procedure. An effective practice and one which it is difficult to get students to fall into the habit of following, is to think about difficult points or items in odd moments. This is not particularly time consuming and it pays dividends. The kind of drill or practice which is needed in mastering scales upon the piano can not be done in this fashion, but on the other hand, there are hundreds of types of learning demanding the mastery of material where it is possible.

Drill is most effective when it is conducted upon material which is thoroughly understood. Every one has probably had, at some time or other, a teacher who said, "Don't bother now about what this means. Just go ahead and learn it and I'll explain what it means later." Nothing could be less conducive to mastery. For the element of familiarity and understanding accentuates the process of learning and obviates the necessity of excessive amounts of drill.

Drill should be an attentive process if it is to be effective. The routine mumbling of verb forms or the mechanical parroting of formulæ is not productive of good learning. Only when attention is at a reasonably high pitch can material which is being gone over and over be expected to register. The teacher should ask students from time to time to explain material which is being memorized or drilled upon in other ways in order to insure that what is being covered is being understood and that active attention is being maintained. For this reason the practice of having students write exercises hundreds of times is probably not sound. Interest flags and desire to learn along with it. Indeed, the whole emphasis should not be upon any given or set number of drills but should rather be stated in terms of the amount that each pupil needs to acquire mastery of the material. Obvious as this may seem, it is unfortunately not always the case, and many teachers still follow the practice of assigning the same class drills for all pupils. Only when drill becomes an active, attentive, rationalized practice pitched in terms of individual needs will a correct place be accorded it in the learning process.

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PART III

LEARNING PROCESSES AND CURRICULAR ACTIVITIES

CHAPTER VIII

THE MEANING AND PURPOSE OF CURRICULAR PURSUITS

Curricula as Cultural Units

Humanity orders and is ordered by the universe. In this reciprocal situation, human beings of low culture bow helplessly to nearly all the conditions imposed by nature. By simple clothing and shelter, they better somewhat their control of nature, but they make futile guesses about the universe and beat their tom-toms to drive away the evil spirits of pestilence. Human beings of high culture also bow helplessly to many conditions imposed by nature. But, in contrast with men of low culture, they employ scientific keys to the problems of nature, and they weave together their solutions of these problems in complicated patterns which affect all the types of human conduct.

Children begin life in a universe which is less meaningful to them than is nature to the primitive tribesman. Their basis for the development of meanings lies in their own equipment for reacting and the more or less ordered universe into which their protectors are about to induct them. Food is one of the first objects to become meaningful. The objects and activities connected with food are also under their observation. In a sense, these objects constitute the first units in humanity's curriculum. They involve infants in an elementary integration of human conduct. All that a child needs to "know" at this

stage are the signal to bring food and the movements of taking food into the body. Adult protectors who are integrated with this elementary food "unit" acquire significance by making additional knowledge unnecessary.

Between this limited knowledge and the knowledge possessed by the dietitian who plans the rations for the infant's later development, there lies a succession of cultural units, which only a systematic ordering of life and nature can furnish. This is a fragment of modern science. Between the infant's food signals and the dietitian's food symbols, there lies another succession of cultural units, which only a social and individual ordering of human life can supply. This is a part of our linguistic heritage. The protected life of children and their bodily yearnings, without their own systematic study, lead children to add other morsels to their diet. But such a protected existence does not supply the dietitian with a knowledge of protein poisoning and the science of a correct dietary. The dietitian, in her training, had to extend her interests far beyond the immediate needs of life and pursue an indirect course of life and study. Remote rather than immediate ends were then her primary concern.

The high culture of modern life requires an ever-increasing number of units to equip each new generation of human beings for the effective ordering of themselves and their universe. In a broad sense, these cultural units include all the environment to which an individual responds throughout his life. These units constitute the individual's curriculum. The curriculum, like charity, begins at home and extends to all the world. As the major part of one's life is spent outside the school, the greater part of an intelligent person's curriculum may properly be said to lie outside the school. Before he begins his schooling, during the free hours of the school

period, and after leaving the school, the individual responds to units which, in cultural importance, are no less significant than units of school curricula. Before he begins school, the pupil acquires certain elements of all that he will pursue in school. Some of these elements, as the foundations of mathematical knowledge and skill, are correct and well learned; others, as the intricacies of English speech, are often incorrectly or badly learned. The continuous articulation of school and extra-school learning is of utmost concern to schools.

School curricula include opportunities for such continuous articulation and also those portions of environment which are necessary for effective living and which are not adequately provided outside the systematic organization of the school. These significant portions of the natural and social environment are necessarily imposed upon children by adults of a high culture. When well organized and skillfully presented and when intelligently and industriously pursued, the units of school curricula become integrated parts of the whole life of children. The higher the culture of a race, the greater the number and intricacy of cultural units, and correspondingly augmented is the difficulty encountered by the child who would integrate them. The elementary integration of many of these units goes on with little direction in the ordinary course of life. The systematic direction of advanced and difficult integrative processes falls mainly on the school. The school must avoid both Scylla and Charybdis in guiding the child's initiative, thought, and enthusiasm, while exacting the adoption, assimilation, and integration of an unsought culture.

These paragraphs are full of difficult implications. First, it is implied that certain objects, as food, become meaningful

to the child, but that adults shield the child from very much meaning. This is a condition which a cultured world continues for every one: the child's wants lead to certain discoveries and integrations, but society's care reduces the need for many additional discoveries. In the case of food, this implication seems innocuous, until one considers the dietitian's interest in the child. It then appears that adults in general seldom know what is best for the child, and that, when they do, they often adopt methods of forcible feeding which all but overthrow the plans of the dietitian. As a result, children are subjected to all manner of restrictions and impositions in matters which might easily take care of themselves, if only the child were intelligently considered. The psychology of motivation explains the intense interest in forbidden foods and the revolt against what is healthful and against good manners. Obviously, the same holds true for music, art, literature, human physiology, and morals in general. What the child wants is often forbidden and what it needs is often inflicted.

Second, there is the implication that society, in teaching systematized cultural units, must substitute remote interests for immediate interests. The fallacy of this is that society does nothing of the kind. Society is powerless either to force or arouse any one's interest in anything, without making the object in question immediately interesting. When remote rather than immediate ends were ascribed to the dietitian, there was implied not that immediate interests were forsaken, but that remote ends had, in some way, become immediately interesting. One of the most common characteristics of homes and schools is the assumption that, if the dietitian, or any one else for that matter, has become well-mannered and useful to society, by a given curriculum, all others persons would do

the same if they would submit themselves to the same regimen. But the curriculum itself performed no miracle. Clearly, the dietitian adopted an interest in dietetics and was, therefore, a different person than if an interest had been adopted in philology. Historically, of course, refined people have been subjected to philology rather than to dietetics, but many children and teachers have found this imposition futile, because the children's interests were in other matters. In presenting cultural units to children, it is necessary first to insure interest in these particular units: remote ends must become immediately interesting.

Third, it has been stated that the curriculum is continuous and includes all of life and progressively equips each generation for the ordering of life. This statement is in contradiction to actual conditions. Students of human life have maintained for centuries that school curricula are either hopelessly outside the main current of life or that they are inflicted upon pupils without regard for the remoteness of the pupils from the curricular content. It is even maintained that human beings are interested in almost everything except what they have been taught! One thing is certain: school curricula, though potentially significant and interesting, are not so automatically, for they are so remote from the main course of human life—the greater this remoteness, the greater the futility of curricula. The breach between this main course of life and curricula must be closed by skillful integration. The only justification for any curriculum is that it can be integrated with the main course of life and make a contribution to a continuing, progressive existence. The key to this difficulty also lies in a sound psychology of motivation and correlation. A child seldom, if ever, realizes anything of importance through a curriculum in which he has no interest.

The best thing to do with a disinterested child is either to find some one who can interest him or change his curriculum. Punishment for a lack of interest in a curriculum has been and still is the prescription in schools where only a relatively meaningless curriculum is inflicted. This absurd procedure of attempting to interest a child in something by conditioning him against it was never successful. Only those pupils who could overlook the teacher's errors and see the significance of these cultural units were able, under such conditions, to connect curricula with real living. "Lickin' and larnin'," are so far apart that only the most stupid sadists could ever have reconciled them. Modern parents and teachers have divorced this ill-mated pair, but they often substitute equally vexing, though more subtle, devices for making curricula ineffective. Of these devices, the leverage of an examination deserves mention. The situation is not hopeless, for a competent teacher, by showing the relation of school curricula to life in general, can interest a child in what is worthy of the child's attention.

Fourth, a plea has just been made for articulating the curricula of the school with those outside the school. It is often urged, on the contrary, that the school must fight against the outside world to counteract evil influences. The effects of this policy are noteworthy in English usage as well as in morals. While there can be no doubt that the standards of English usage in schools are often superior to those of a neighborhood, there can also be no doubt that the directness of nonacademic expression combined with the valued sanction of social life outside the school defeat the school. Upon release from the classroom, the pupil reverts to customary usage. One may say that he whose usage is forced against his will is of the same corrupted usage still.

Unless the usage of the school is shown to be more effective outside the school, a double standard of expression is the most that can be expected of pupils. An integration of all usage can be effected not by antagonism to the child's standards but by a skillful employment of those standards in developing a more effective usage. The chasm between children's life problems and the academic grind is, in part, imposed upon schools which are forbidden to enter upon the controversial affairs of life. At present, neither parents nor society in general can allow schools to treat all these issues. Sex, as an example, is a particularly difficult topic, partly because of the misinformation and misdirection that children have about it when they enter school, and partly because the teachers themselves are seldom able to discuss the problem normally and intelligently. Such issues are controversial because of popular opposition to the inevitable conclusions of unbiased students and because of the lack of incontrovertible data which might resolve the controversies. As these issues are vital and must be acted upon, pupils need and are interested in fundamental information about them. Only maturity of thought, exact data, and experience can settle them. The schools can supply only such data and interpretations as exist. Even these can not profitably be supplied, if they only antagonize and more firmly intrench popular, though unfounded, beliefs. Like the case of English usage, these issues must wait until people are ready to consider more effective means of thinking and acting than they already possess. As many persons are, at some time in life, ready for such a consideration, this is an additional argument for a curriculum that is continuous through life. Slowly, the laboratories of life experience are converting influential persons to tolerance, and some of the radicalism of yesterday is becoming the

orthodoxy of to-day.[1] Occasionally, a school springs up for experimentalists.[2] Schools in general may well bide their time until such enlightened persons can support them and until experimentation has led the way in such intellectual ventures. Meanwhile, they should cultivate persons who can aid in this policy of articulating curricula with the tangled threads of incongruous and controversial life.

Fifth, there are the implication that adults impose curricula and the opposing implication that pupils learn only through conduct which is significant for themselves. This troublesome paradox can be resolved if pupils can realize themselves through conduct which employs these adult impositions. In the first place, it is a mistake to assume that, because curricula are adult impositions, they are, therefore, uninteresting or without significance to children: they may be or they may not be. A canvass of the spontaneous activities of children shows that many of these activities are modelled after those of adults and that many others are directly dependent upon adult impositions.[3] In the second place, it is a mistake to assume that, if a curricular item is significant and interesting for adults, it is for pupils also. A canvass of pupils' curricular activities as ordinarily imposed shows that much of a curriculum neither arouses interest nor proves significant for the pupil.[4] If the thesis is

[1] See V. F. Calverton and S. D. Schmalhausen, *The New Generation* (The Macaulay Company, 1930).

[2] See Ethel Mannin's *Common Sense and the Child* (J. B. Lippincott Company, 1932), Chapter XV.

[3] *Cf.* Harvey C. Lehman's studies in "The Play Activities of Persons of Different Ages," *Pedagogical Seminary,* XXXIII, 250–292 (June, 1906). Also his chapter in Franklin Bobbitt's *Curriculum Investigations* (Supplementary Educational Monographs, No. 31, Department of Education, University of Chicago, 1926).

[4] *Cf.* Allan Abbott, "Reading Tastes of High School Pupils," *School Review,* X, 585–600, (October, 1902). Also C. S. Crow, *Evaluation of*

true that pupils realize themselves educationally only by conduct which is meaningful, interesting, and gripping,[5] then it follows that curricula are educative only when certain conditions of educative conduct are provided in curricular pursuits. If, then, curricula as adult impositions, can be pursued under these educative conditions, they are effective; otherwise, they are not. These conditions have been discussed in Part II and will be discussed further in this Part.

In the present section, it remains only to be said that curricular units exist to enable human beings to live more effectively in work and play, during and after the mastery of these cultural materials and that these units acquire significance only when they articulate with earlier life, the present life, and the subsequent life of the learner. Curricula are the cultural units upon which progressive conduct is based. Whether for work or play, for skill or understanding, for creation or æsthetic experiencing, curricula are cultural.

Curricula and Conduct

The concept of conduct as man's activity for improved adjustment is associated in popular thought and in philosophy with goodness and happiness. The good person's conduct is progressively better and leads to happiness. While the absolutely good person would judge his affairs correctly from all points of view and act accordingly, the good human being acts as he believes feasible or possible at a given time. He is often hurried, impatient, and unresourceful. He acts

English Literature in the High School (Teachers College, Columbia University, Contributions to Education, No. 141, 1924).

[5] *Cf.* Willis L. Uhl, *Secondary School Curricula* (The Macmillan Company, 1927), pp. 357ff.

according to his beliefs and knowledge and his standards of values, but society and the dictates of individual well-being require him to improve himself in each of these bases of action. When so guiding and conducting himself, he may be called a perfect man.

A clear advantage of this concept of conduct is that it places the responsibility for both enlightened thought and good conduct squarely upon the individual. He can not justify action upon bases which his own judgment discards. Neither can he be remiss in improving his judgment. As his bases for judgment improve, his actions must also improve. To-day one is guided by to-day's bases of action, but to-morrow, one may, by enlightenment, have different bases of action—a better conscience. To-day's conduct and to-morrow's conscience may belong in different realms.[6] Furthermore, the acceptance of this responsibility makes possible that perfection which is within the reach of every one. Society and the individual have no longer the ancient excuse of ignorance for misconduct. Goodness is not the property of only the aristocratic perfectionist, but, instead, it is the function of every human being.[7] Finally, society employs many agencies, as economic pressure and social approval, to encourage the learner to perfect his conduct. As no member of society can without such social aids as home and school, economically improve himself, these and other institutions with their curricula are provided. The curriculum of life—out of school and in school—is, therefore, for the enlightenment of the

[6] *Cf.* James M. Gillis, *The Moral Law* (National Council of Catholic Men, Washington, D. C., 1931), p. 19.

[7] *Cf.* Walter Lippmann, *A Preface to Morals* (The Macmillan Company, 1930), pp. 199 and 320–326, and Gorham Munson, *The Dilemma of the Liberated* (Coward-McCann, 1930), Chapter VII.

individual in beliefs, knowledge, and standards of values. His curriculum, if good, leads to improved conduct.

Curricula have both social and individual consequences. As no one lives unto himself alone, society and the individual must coöperate in curricula. Except for society, an individual might well have a curriculum that improves his ability to enhance solely his narrowly egoistic ends. Such a curriculum would be good for him, and it would aid him to achieve a certain kind of happiness. Except for the individual, any social group might well have a curriculum solely to gain the ends desired by its ruthless members. Such a curriculum would be good for that society, and it would lead to a certain kind of happiness for its members. Individuals as despots and society as dominated by unified purposes have actually planned curricula in these ways. Indeed, no curriculum has ever been fully acceptable to both society and the individual. Sufficient reasons for these unsatisfactory conditions can be found in the bases of conduct discussed in Chapter II. A good curriculum is one which recognizes both society and the individual and improves to an optimum extent the conduct of every one concerned.

With increasing knowledge comes a need for changing conduct and, in turn, a need for change in society's curriculum. Scientists find that customary conduct is often based on ignorance. They find that the primitive Corean custom of deferring for thirteen days the burial of a person who has died of smallpox is, for example, bad for society and unnecessary for safeguarding the individual against a premature burial. Conduct and curricula are changed accordingly. Science finds also that the spread of the same disease is preventable by vaccination and quarantine. Con-

duct and curricula are again changed. In neither of these cases can society brook the objections of an individual; society may, however, grant that the individual means well, but it insists that his objections are founded upon ignorance and that his conduct must change, even though his own ill-founded beliefs remain. Next, society provides its own means for improving the beliefs of the next generation of individuals. In this way, the majority act as a group in behalf of lagging members. In other cases, the situation is reversed. An individual may be frustrated by a lagging society. When Copernicus attempted to improve conduct by new discoveries in astronomy, he found that society was not only content with but also insistent upon a nonexistent solar system. The conflict between his discoveries and the commonly held beliefs was so great that a small, intelligent minority had to wait for a lagging majority. In such cases, after new knowledge has been accepted, the fundamental aim to attain goodness and happiness through effective conduct does not change; only the beliefs and knowledge which underlie standards of value and these standards themselves change. A discoverer finds by investigation that old standards of value are due to erroneous beliefs, and he sets up his newly discovered facts as a basis for new standards of values. Indirectly, by offering new data which necessitate new bases of action, he proposes new patterns of conduct. Society, by adopting this new conduct, evolves its changing curriculum.

While granting the right of any member of society either to cherish curricular materials that should be discarded or to plead for materials that should be added, one must recognize the obvious fact that much of yesterday's curriculum is rubbish and that advances come only when tolerance for both old and new facts exists. Conduct can not improve as

it should, if curricula are bad, for no generation can realize itself through such curricula. The meaning and purpose of curricula are dependent upon the efforts of all individuals to abandon their house of make-believe and enter the world of reality. Entrance to this world is gained by the keys of intelligently interpreted science and research.

The complex curriculum of the present is a mixture not only of what has been examined in the light of science and research, but also of what exists because of an uncritical veneration of either the old or the new. In manners, morals, literature, music, art, and science, the child is confronted by diverse teachings at home, at school, and every other place that he frequents. The teaching of one group is disregarded or even ridiculed by another. In these subjects, as in others, what the child learns in one place is often the poorest possible preparation for what he is to learn elsewhere. Were children not almost indestructible, they would be like the dogs which are sometimes crazed in psychological laboratories by a series of conflicting directions. The sheer demands of the present for complicated conduct entail training that would be sufficiently difficult if society could work together in providing a suitable curriculum for each child. This situation, though psychologically desirable, will be desirable in a broad sense only when conflicting groups unite and insist that experts in each department of knowledge prepare integrated curricula for schools and all other institutions that affect children—an unlikely resolution of the problem. Until that time, teachers can do no better than to correlate, where possible, the work of their departments, amplifying here and explaining there, and presenting economically what will best prepare the pupil for a complicated and vaguely understood existence.

Goodness and happiness in man—the essentials of a relatively perfect human life—depend then upon curricula by which each generation advances beyond the preceding. By self-realization through a curriculum, each individual progresses and perfects himself according to his aptitude and the appropriateness of the curriculum. His curriculum then improves him by giving knowledge, beliefs, and standards of value which are bases of his action. Curricula must compete for attention with extracurricular activities to which they are now, for many individuals, subordinate. As curricula often conflict with custom and with certain individuals' views, they must be safeguarded against attacks by the unintelligent and, at the same time, be continually open to the results of science and research.

Curricula as Materials

In a broad sense, curricula are data or materials to which people react when they engage in any kind of conduct. School curricula consist of problems and certain data or cultural items to which pupils react to supplement their out-of-school conduct. No datum, apart from the pupil as reactor, can, with exactness, be classified as an item of any curriculum. In common parlance, however, data to which pupils will at some time react are designated as curricular items or educational materials.

Too great emphasis can not be given to the concept of curricula as materials which are actually acted upon. They are a part of an individual's life career, and they have no meaning whatever save as they become meaningful to the pupil who is living them. The cultural item which states that two plus two are four may, of course, be noted as one which

every one should learn. It is then included in a course of study, but it becomes significant or meaningful as a curricular item only when a pupil, by responding to the data of life, makes it so. The data and the responding agent are always parts of the same process in a curricular situation. The data are not finalities, but, instead, they are materials for further interpretation.

As material to which pupils will react, curricula comprise, therefore, the data of experience, which constitute what is called the body of knowledge, and to which pupils will respond in meeting their own real or imagined problems of adjusting themselves to their universe. These data of experience have, of course, been faced in the same way by many generations of human beings. They have, therefore, been acted upon, *i. e.* they have been interpreted, systematized, and crystallized in the solving of other persons' problems. This means that acting upon the data of experience has led to solutions and concepts, which are, for the persons who did the acting, meaningful short-cuts. These concepts, or results of experiencing, are not necessarily meaningful short-cuts for any one else. They are meaningful to those persons only who can experience and react to enough of the original data to make the concepts meaningful. To all other persons these concepts are mere formalities or figments of imagination, and, if learned as such, they can not be acquired effectively, nor can they be intelligently used for the guidance of later conduct.

Either the brilliant or the dull pupil can memorize concepts without knowing their significance or meaning. When this happens, the pupil acquires the veneer of a formal curriculum; he does not find out how to do his own learning or thinking. He is trained to respond to examinations or even

to adopt the imposed patterns of conduct, but he is not educated to find meanings for himself and construct his own life as an intelligent experimentalist. He can see life only through the lenses that fit the eyes of another and not through the only lenses that can fit his own eyes. He is traditionalist or formalist who knows other peoples' reasons for conduct, but who has few, if any, reasons of his own. Serious educational deficiencies follow when such memorization and acceptance of concepts takes place. The duller the pupil, the less meaning he is likely to supply from his own experience for the interpretation of the few ready-made concepts or views which he memorizes. Herein lies the fault and the futility of the common practice of allowing the dull pupil to pursue a course, as geometry, if he has an opportunity only to memorize the concepts. Such a pupil, even more than the brilliant pupil, needs richness of meaning—connection with living in general. The brilliant pupil may immediately or later supply meaning from his own experience. That even he does not do so, however, is the well-nigh universal testimony of scholars. All schooling is cramming when ready-made concepts are only memorized. Pupils then emerge from schools with little save generalizations, and generalizations are notoriously untrue to facts. Consequently, such pupils are signally unfit for effective living, for their generalizations do not square with life situations. Once such a pupil's respect for other peoples' reasons fails, he becomes a breaker of traditions without a means to formulate his own course of action. In this way, he may be a trained person but a bad one: he may have the veneer of other peoples' standards, but no standards of his own. He can not effectively meet new situations.

This is the precise danger of a formal curriculum: it is

unintelligible and can not become an effective guide to improved conduct. It is the tool of persons who indoctrinate unintelligently. It compels the pupil to accept as authority that for which he lacks the data of his own experiencing. It is a specious short-cut to doing what authorities dictate, and it stultifies the learner.

A curriculum can be systematic, however, in the development and presentation of problems and data. Such a curriculum begins not with ready-made answers but with what Nietzsche calls the child's ardent thirst for knowledge of things.[8] Then, to continue Nietzsche, we are "led forth to the despair of ignorance and having our limited everyday life, our transactions and everything in the house, the workshop, in the sky and the landscape, from morning till night, dissected into thousands of problems, of harassing, mortifying, irritating problems—in order afterwards to be shown that our desires first of all require a mathematical and mechanical knowledge, and then to be taught the first scientific delight in the absolute logic of this knowledge." [9]

This formula for the curriculum—beginning with the pupil's problems and data—does not require an abandonment of all the solutions previously discovered by the race and a fresh and complete reconstruction of knowledge. It requires only that those earlier solutions be arrived at through the intermediation of the pupil's own problems; by the time the pupil is ready for another person's solution, he will have seen his own problem, collected data, formed hypotheses, and so on, through the regular course of problem solving described in Chapter III. He can then compare intelligently

[8] Friedrich Nietzsche, *The Dawn of Day* (1881), Section 195.
[9] *Op. cit.*, Section 195. Here quoted from Tiffany Thayer, *The Greek* (A. and C. Boni, 1932), p. 162.

his solution with that of another person and, ordinarily, with the help of the teacher as a more experienced problem solver, accept the carefully-worded statement of a specialist's answer to his problem. He will then have at least a semblance of the specialist's background for the solution. This point was referred to also in Chapter III, where it was said that improved adjustment is in part a product of problem solving and in part a product of the acceptance of some one else's solutions of problems.

Instead of displacing the teacher and the world's store of knowledge, this curricular procedure dignifies both: the teacher follows Rousseau to the extent of cultivating the "natural" curiosity of the pupil, and the store of knowledge becomes a useful aid by helping the pupil to see more clearly the meaning of his own data and to state more adequately a solution of his problem. Such education is a kind of indoctrination, but it is acquired in a manner which admits of further and later reconstruction by the pupil, for it provides the data of continuing thought. It allows the pupil to accept some one else's solution of his problem as a tentative conclusion of his study and not as an enforced finality or dictum. Furthermore, this procedure shows the pupil certain limits of knowledge, and it enables him to see that he can not, at least in his period of immaturity, know all things. He can not, nor can the scholar, arrive at a final conclusion about all phenomena. He can recognize, however, like the scholar, that, if he could know all the data that affect a given problem and interpret them correctly, he could then give a final answer. Falling short of that gigantic enterprise, he will simplify the process by adopting what seems to be a possible explanation of phenomena and act upon it. But he will understand that his explanation may be wrong. He will

at least be out of the limbo of certitude about the unknown. His emancipation will be especially important in his thinking about social affairs.[10]

The point of view here presented is intended to be at complete variance with the kind of traditionalism or indoctrination that supplies the inquiring minds of children with ready-made concepts. Such traditionalism is indefensible for the development of children for the same reason that it has been proved indefensible for scholar. Neither the child nor the scholar can develop or progress until he abandons the procedure of accepting the finalities of ready-made concepts and seeks his own data for his own problems.[11] When finalities constitute a curriculum, schooling consists of fitting the child for a niche in an already established order. The child need not inquire; he needs only to accept. The "curriculum" in such a system is based upon existing adult life and is necessarily made entirely in advance. "Learning" then means the successful acquisition of finalities or assignments which can be "given back," on demand, to the teacher.[12] Conduct then becomes a process of muddling through life with ready-made guides that seldom fit the issues of any one's own problems. Opposed to such traditionalism is the plan of the experimen-

[10] *Cf.* John Dewey, *The Quest for Certainty* (Minton, Balch and Company, 1929), pp. 216–217 and 270–271. See also Gorham Munson, *op. cit.*, Chapter VIII. Numerous applications of this point of view are presented in George Boas, *Our New Ways of Thinking* (Harper and Brothers, 1930).

[11] For an account of this shift in science from finalities to data, see G. H. Mead's "Scientific Method and the Data of Science" in *Creative Intelligence*, John Dewey, editor (Henry Holt and Company, 1917), Chapter IV. Reprinted in part in D. S. Robinson's *Anthology of Recent Philosophy* (Thomas Y. Crowell Company, 1929), pp. 466–473.

[12] W. H. Kilpatrick, "Certain Conflicting Tendencies Within the Present-Day Study of Education," in *Essays in Honor of John Dewey* (Henry Holt and Company, 1929), p. 186.

talist in education who seeks the continuous reconstruction of experience by the child as well as by the adult. The child in this process faces problems with data and not with completed formulæ and solutions. The curriculum then consists of problems and data which primarily tell the pupil not what to do or what to think but, instead, equip him, as Childs says, so that he can manage his own doing and thinking.[13] In a very real sense, the teacher working with the pupil, makes the curriculum.

As the problems of life cut across a great variety of data, certain educators have urged that the departmentalization of curricula be abandoned in favor of a unified living of whatever data are needed by pupils at any given time. The procedure described in this section does not, however, require any such abandonment; instead, it intensifies the meaning of the problems and data to be presented in each department. While pupils are in the elementary school, where all pupils have the same general curriculum, a single problem can furnish the basis for data in each of the customary departments. In high school and college, where different pupils pursue different curricula, a problem can unify the work of more than one department, but it is less likely to do so than in the elementary school. In no case, need this plan decrease pupil activity with significant departmentalized data.

The organization of the elementary school for such a unified program is probably best exemplified by the cooperative group plan described by Hosic.[14] This plan con-

[13] John L. Childs, *Education and the Philosophy of Experimentalism* (The Century Co., 1931), p. 126.

[14] James F. Hosic, "The Organization of the Elementary School," *Educational Method,* VIII (1928–1929), 11–14, 81–84, 147–150, 199–202, 259–261, 319–321, and 395–398.

sists essentially of unifying the purpose of pupils in all departments by all teachers who, coöperatively, organize the work and play of pupils around a single problem at a time: "there are no classrooms in the traditional sense, only library rooms, laboratories, shop-studios, museums, play rooms, and the like. The teachers constantly join forces in guiding the activities of the pupils; each teacher contributes as she can from her special field. All activities, moreover, are integrated, so that artificial distinctions such as curricular and extracurricular have no place. The children are not merely pursuing 'courses,' they are learning how to live." [15] Examples of the selection and organization of materials for such unifying of all elementary school work and of the modified application of the plan to secondary and collegiate work will be given in Chapter IX. In all those cases, the purpose will be found to be the presenting of problems and data through the media of departments of knowledge made meaningful by teachers who articulate child, home, and life in general with the cultural items of school curricula. The many schools which follow this general procedure are, like all others, activity schools. An important distinction is that, in such schools, the activity begins with both teacher and pupil, and not with the teacher as dispenser of finalities. The teacher in such a school is a director of significant living, and the curricula supplement and intensify the progressive life of pupils. Economy parallels this curricular program, for only those items that can be related to living are included, and those are pursued under the urge of a vital problem.

[15] Hosic, *op. cit.*, p. 321. See also L. Thomas Hopkins, "The Relations of the Coöperative Group Plan to the Curriculum," *Educational Method*, X, 468–471 (May, 1931).

Objects as Curricula

As curricula consist of the life experiences of every one curricular materials are present in any kind of experience that appeals to any of the sense organs in or out of school. Fundamentally, the only difference between curricular materials in the present day and in the past is in the development of additional objects and representations of objects. Before proceeding with the discussion, it may be noted that all curricular materials are objects or representations of real or hypothetical objects. This point is obvious enough in the case of the concrete material used in the primary school project where a miniature house is constructed. It is not always sufficiently clear to the student who reads the physical hypothesis that a system of concomitant forces is statistically equivalent to a single determinant force, or the social principle that progress is the evolving identification of the individual man with the social man. To the extent that these statements convey meaning, they are, however, referable to objects. The same is true of all mathematical and philosophical expressions.[16] The distinction between objects themselves and the advanced principles just stated warrants separate treatments of objects and abstract or indirect representations of or about objects. In every case, whether curricular materials are primarily scientific, social, or æsthetic, objects themselves underlie, as points of reference, both the simple and the abstruse materials of curricula. Nature, society, and the individual are the sources from which objects, as curricular materials, are drawn. This trilogy is inextricably tangled in modern life. Objects external to sentient beings

[16] *Cf.* A. N. Whitehead, *Process and Reality* (The Macmillan Company, 1929), p. 497.

and whether natural or rearranged by man, will be discussed first; afterwards, society and the individual will be presented as sources of the additional objects which are constantly presented to pupils.

1. Objects which are primarily external. What are the materials which appeal to the sense organs? First, there are external objects. As human responses, almost without exception, involve external objects, the means of presenting curricula are fundamentally external objects. The child, from birth onward, acquires exact data from experiences with objects. Objects alone do not cause the experiences, for, as stated in Chapter II in the discussion of situations which vitally affect the organism, both objects and responding organisms are necessary. The particular experience will, therefore, vary with the organism. If the object is a rock, it may be experienced in many ways. It may be regarded as something heavy, as a weapon, as granite, as containing certain chemical elements, and so on. If this is the child's first experience with a rock, his experience will, obviously, be very different from that of a mineralogist. To both child and mineralogist many aspects of the rock will probably be overlooked.

Objects as curricular materials received an impetus from Rousseau who, in the *Émile,* advocated the use of natural phenomena as a basis for learning. Following Rousseau, Pestalozzi developed a systematic scheme for object teaching. Although Rousseau described object teaching in connection with other experiences, as the teaching of the cardinal points to Émile who had lost his way in a forest, Pestalozzi and his followers developed materials which were as formal as the verbal materials which they supplanted. Pestalozzi, pointing to the wall, asked, for example:

"Boys, what do you see?"
ANSWER. "A hole in the paper."
PESTALOZZI. "Very well, say after me.
"I see a hole in the paper."
"I see a long hole in the paper."
"Through the hole I see the wall."
"Through the long narrow hole I see the wall."
"I see figures on the paper."
"I see black figures on the paper."
"I see round black figures on the paper."
"I see a square yellow figure on the paper."
"By the side of the square yellow figure I see a round black hole."
"The square figure is joined to the round figure by a large black stripe, etc." [17]

This was probably Pestalozzian object teaching at its worst.

An example of his more effective object teaching is illustrated by a unit in geography as described by one of his pupils:

"The first elements of geography were taught us from the land itself. We were first taken to a narrow valley not far from Yverdun, where the river Buron runs. After taking a general view of the valley, we were made to examine the details, until we had obtained an exact and complete idea of it. We were then told to take some of the clay which lay in beds on one side of the valley, and fill the baskets which we had brought for the purpose. On our return to the Castle, we took our places at the long tables, and reproduced in relief the valley we had just studied, each one doing the part which had been allotted to him. In the course of the next few days more walks and more explorations, each day on higher ground and each time with a further extension of our work. Only when our relief was finished

[17] Roger De Guimps, *Pestalozzi, His Aim and Work* (D. Appleton and Company, 1890), pp. 181–182.

were we shown the map, which by this means we did not see till we were in a position to understand it." [18]

Recognizing the need for words which would aid pupils in identifying the characteristics of objects, lists of qualities of objects were prepared for pupils to memorize:

"Lessons in names consist in giving the children lists of the names of the most important objects in all three kingdoms of nature, in history, in geography, and in the pursuits and relations of mankind. These lists of words are placed in the hands of the child, merely as exercises in learning to read, immediately after he has gone through his spelling book; and experience has shown me that it is possible to make the children so thoroughly acquainted with these lists of words, that they shall be able to repeat them from memory, merely in the time that is required to perfect them in reading: the gain of what at this age is so complete a knowledge of lists of names so various and comprehensive, is immeasurable, in facilitating the subsequent instruction of the children." [19]

The cycle from verbalism to objects, thence to simple terms descriptive of the objects—with the objects still present, and thence to classified lists of scientific terms was completed in America by 1870. By that year, Dr. W. T. Harris, superintendent of schools in St. Louis, included the following materials in the course of study for Grades III, V, and VII:

Motion and force
1. Laws of motion
2. Attraction of gravitation
   a. Weight and fall
   b. Center and gravity
   c. Specific gravity
   d. Action and reaction
   e. Friction
   f. Inertia [20]

[18] *Ibid.*, p. 255.
[19] Barnard Henry, *Pestalozzi and His Educational System* (C. W. Bardeen, Publisher, Syracuse, New York, 1874), pp. 78–79.
[20] *Report* for the year 1870–1871.

After this cycle, came object experiencing on the child's own ground. "What is the child?" asks Colonel Parker. "What is this little lump of flesh, breathing life and singing the song of immortality? . . . It is a question for you and me, and for the teachers of the present and the future, to answer; and still it will ever remain the unanswered question. We should study the child, as we study all phenomena, by its actions, and by its tendencies to act. The child is born, we are told by scientists, deaf, dumb, and blind, yet, in design, possessing marvellous possibilities for development. It is well to stand by the cradle of a little child who has drawn his first breath, and is ready to be acted upon by the external energies which surround him." [21]

Parker delineated carefully the stages by which the child progresses from the attitude that the world is "one big, blooming confusion" [22] to a meaning or concept for experienced objects. For him as for the present-day psychologist, the important points in object teaching were the responding organism and the apparent significance of the external object to the organism. Whatever may be desired of the adult, the child's education must begin with the objects that are significant to him, however unimportant these objects may seem to the adult. Take the child to an intelligible environment of fields, hills, valleys, lakes, and woods, or bring chickens, dogs, cats, and guinea pigs, and samples of children's own collections to the school. Upon such object experiencing, lead the child to find his own problems and data.[23]

Object teaching may be either direct or indirect. That is,

[21] Francis W. Parker, *Talks on Pedagogics* (E. L. Kellogg and Company, New York and Chicago, 1894), pp. 3–4.

[22] William James, *The Principles of Psychology* (Macmillan and Company, 1891), Vol. I, p. 488.

[23] Parker, *op. cit.*, Chapter VII.

either the object or a representation of the object, a rock or a word or idea referring to a rock, may be presented. In both cases an external object is involved. Objects have sometimes been called simple or complex according to whether or not the object itself or something in its place is presented. The fallacy of this judgment is due to overlooking the experience of the person to whom the presentation is made. One of the most difficult assignments for an adolescent pupil might be simply a rock. Assuming that the pupil had already learned to read and had seen many rocks, a chapter on petrology might be easier for him than the rock itself. The simplicity or complexity depends upon both the readiness of the pupil's organism and the desired outcome of the experience. Ordinarily, of course, the easiest situation for the learner is that in which both the object and indirect representations of or about the object are present.

Object teaching has been refined for use at all levels of instruction. In the nursery, toys which will attract the child and lead to some form of manipulative or constructive activity with them are used. Fully made, complicated toys are often rejected, for they are alleged not only to bewilder the child, but also to leave nothing further for the child to do save to operate them in their completed form. Formal kindergarten materials, as cubes, cylinders, spheres, have been rejected, except when supplied in sufficient quantity to allow the child to construct something for himself. The forms, as symbols, are difficult and without significance; but the objects, as construction blocks, are easy and significant for the child. In science laboratories, apparatus is effectively used upon the same basis: simply constructed apparatus is useful as object teaching, if it leads the child to obtain significant data; but apparatus that is complicated may be either un-

intelligible or so difficult as to prevent the pupil's seeing a relationship between the apparatus and the problem which confronts him. The apparatus used in determining the coefficient of the expansion of heat, together with the mathematics of the problem, is, for example, often overcomplicated, fruitless object teaching for many pupils. The use of technical slides in biology is another example of proceeding too abruptly from the objects that can be used without involved analysis to representations which can be understood only by the pupil who has previously experienced the objects in a simpler form. Complicated object teaching of this sort has progressed to such a point in secondary schools and colleges that attempts to show the relative value of individual laboratory work by pupils and lecture demonstrations by teachers have often shown an apparent advantage of the latter. This difficulty of showing the advantage of direct object teaching when pupils manipulate the objects is probably due to the technical difficulties presented by the objects. The teacher as lecture-demonstrator probably reduces these difficulties by his running account and by pointing to the significant, functional aspects of the apparatus. This point will be discussed later in connection with the presentation of the psychology of curricula.

As indicated by Pestalozzian practices and studies of science teaching, the principal difficulties with object teaching seem to be those of finding significant, intelligible objects. Objects are useful as curricular materials when they utilize sense perception as a foundation for exact knowledge, when the pupil is ready for the given object so that he will actually observe what is significant, and when the observation has a place in progressive conduct.

2. *Social-individual objects.* Social-individual experiences

comprise much of the most realistic object teaching and learning in an individual's life career. The physical urges of each person, as hunger and sex, are samples of the most significant objects in human life. No one, whether awake or asleep, neglects their promptings. They not only motivate, but they also demand study and satisfaction, directly or in sublimated forms. Other human beings, also, whether colleagues or competitors, force themselves upon the individual. Something has to be done to keep them in their places! They, too, are objects for serious consideration.

A person's own physical organism is a summation of a vast system of intricate parts all of which influence conduct by their own presence and activity within the body as well as by their reactions to external objects and to other persons. This social-individual equipment and its activity have already been discussed in Chapters II and V. So responsive is the human organism and so deeply ingrained are the effects of social life to social environment, that, as indicated in Chapter II, man has often been credited with a special instinct called gregariousness. The obvious gregariousness of the school child or the adult indicates that, even in the absence of such a quality as an original unit of instinctive endowment, human beings use the equipment which they possess in adapting themselves to others as well as to inanimate entities. The data of such social and individual experiences will now be presented with reference to school curricula.

Here, as in the case of other object teaching, Rousseau gave an impetus in his treatise on the education of Émile. So thorough was Rousseau's revolt against the society of his day, however, that his advice was to utilize the child's own endowments in an extremely individualistic study of nature

as a means of protecting the child against undesirable social influences. In turning his back upon society in the case of Émile, Rousseau was concerned mainly in avoiding only the effects of existing society and not the effects of a more desirable society. Yet, even in the most desirable society, he pleads for the integrity of the individual apart from any particular society. Here, then, is the basis for social-individual objects: let the child first recognize himself as an individual and, second, as a member of society.[24] Owing, first, to the prohibitive cost of training all children by private tutors and, second, to a modification of this social theory by Pestalozzi and Froebel, modern education has been planned to provide an optimal training of the child both as an individual and as a member of existing society. Froebel, taking his cue from Pestalozzi, adopted the principle of education through social participation. Games and other play and work in the school as a society in miniature were organized in Froebel's school to cultivate a spirit of coöperation, and "intellectual and moral power." [25] By the same means, the child as an individual learned by self activity in the Froebelian school:

"Play is the first means of development of the human mind, its first effort to make acquaintance with the outward world, to collect original experiences from things and facts, and to exercise the powers of body and mind. The child, indeed, recognizes no purpose in it and knows nothing, in the beginning, of any end which is to be reached when it imitates the play it sees around it, but it expresses its own nature, and that is human nature, in its playful activity. The further its development proceeds the more significant are the various movements which we know as the

[24] For a more complete discussion of this point in Rousseau's writings, see William Boyd, *The Educational Theory of Jean Jacques Rousseau* (Longmans, Green & Co., 1911), Chapter VI.

[25] Friedrich Froebel, *The Education of Man,* translated by W. N. Hailmann (D. Appleton and Company, 1894), p. 113.

movements of the human being, from which all human culture has originated." [26]

The child's individual equipment for such learning by doing had already been described aptly by Rousseau in the *Émile* where he says, "As soon as we have what may be called a consciousness of our own sensations, we are disposed to seek or to avoid the objects that produce them: in the first instance, according as they are agreeable or disagreeable to us; at a later time, according to the congruity or incongruity between ourselves and them; and ultimately according to the judgments we form about them by reference to the idea of happiness or perfection given us by reason. These dispositions extend and strengthen with every increase in our sensibility and intelligence, but under pressure from our habits they change more or less with our opinions." [27] Here we have at once the principle of readiness, the basis for pupil activity in learning, and the principle of directing activity toward a desired consequence.[28]

The experiences which each individual undergoes are the central feature of his curriculum. External objects are only media through which such experiences arise. How does a book become a part of a curriculum? When does a rock by the roadside enter the pupil's course of study? Only when it assists in the arousal of internal reactions, does the book, the rock, or anything else assume curricular aspects. For an American child, all such materials might as well be in China, if he does not react to them. Physical proximity is no guarantee of experiential data. But if significant reactions

[26] Baroness B. Marenholtz-Bülow, *Reminiscences of Friedrich Froebel*, translated by Mrs. Horace Mann (Lee and Shepard, 1877), p. 67.

[27] I, 12.

[28] John Dewey, *Democracy and Education* (The Macmillan Company, 1916), Chapter XI.

are set up, the objects themselves may become significant. The reactions set up within the child lead to protoplasmic changes and are also interpreted with respect to future courses of action. Not all experiences carry important consequences any more than all external objects are significant to all sentient beings who come within sight of them. Yet it is true that the child, who shuns a hot stove, does so, not so much because the stove gave him a complete experience, as because his reaction to the stove was a vivid supplement to the stove. In addition to the hotness which affects sensory conductors of pain, these sensory conductors themselves are a medium which lead to further reactions, including a reflex withdrawal and a conclusion about hot stoves. Likewise, either a favorite book or a friendly companion sets up a circuit of direct sense reactions which are, in turn, reacted to by interpretative processes.

To say that these sensory reactions are curricular items, is to say that man is his own curriculum. But to deny this, is to contend that external objects, whether reacted to or not, are curricular items. The escape from this dilemma, both of whose horns are heretical, is found by observing that the curricular item has two aspects, one external and one internal. The second seldom arises without the first, and the first is a nonentity without the second. The sense of vision can not read a printed page, if there is no such page; and the printed page can not be read without the sense of vision. In this respect, the case is similar to the relation between heredity and environment. One must conclude, therefore, that curricular items are a summation of external stimuli and internal data. This conclusion is in accord with the earlier discussion in this chapter of curricula as materials which are actually acted upon. An implication of this conclusion is

that all education has its strictly individualistic aspect, dependent upon the individual's sensory data and what he does with those data.

Learning by doing and by problem solving is just this. It is a utilization of curricular items composed of both external and internal data. It is directed by the emotions, conceptions, and judgments of the moment, whose origins are in the individual's previous and present experience with life. By virtue of the normal life process, each sense datum enters the individual's life process according to the concomitant condition of the individual and the direction or bent of his entire being. This conditioning and directing of effort is affected by a problem. The realization of a problematic situation and its attendant activity are not the source of data; instead, they give direction to the sense organs and the use that is made of the sensory data. We may even perceive objects and still miss their significance. Indeed, we are likely to miss the functional characteristics of the objects, unless there is purpose in our observation and in our use of the data obtained by observation. We may draw an object and overlook its essential, functional parts.[29] We may overlook sources of data that are immediate and within ourselves. Every one is likely to overlook even so significant a matter as toothache on the way to the dentist's chair. After images are still more elusive, and they are seldom noted until psychological inquiry begins. Internal reactions, like external objects may pass unnoticed. Again, as stated above, proximity to data is no guarantee of experiential data.

Here is the essential need for teachers whose place in the learning process has been discussed in the preceding section.

[29] F. C. Ayer, *The Psychology of Drawing* (Warwick and York, 1916).

They so present data that the learner is motivated and directed in the functional use of the data. Teachers of science provide not only an object to be drawn by the pupil, but they also direct the pupil's attention to the portions of the object that are of especial significance for the purpose. This often requires that, as Twiss advises,[30] only a sectional diagram of the object will be drawn to show these significant features. The strong beak and the rugged talons of an eagle may, for example, be more significant than a complete perspective in studying the habits of this bird. By providing content and by giving purpose and direction to the pupil's use of it, the teacher enters the social-individual aspect of the curriculum situation; in this respect, the teacher is always a curriculum maker. Teachers, when effective, acquire their effectiveness by their guarantee of this experiential character of the curricular data placed before pupils.

Only the most superficial objects are observed by the child who lives, as did the wild boy of Aveyron, without social direction and motivation. Even in the presence of potentially significant content, as objects, books, and people's actions, the child responds only superficially and by rote, unless a reason for an adequate response is aroused in him. This reason is an outgrowth of his own problems. Purpose and direction are supplied by his problematic situations. These situations are acted upon, and lead to sensory and conceptual responses that would not otherwise arise. The problematic situations and the data experienced in solving them are curricular items of which, as stated above, the individual pupil is the central feature. This summation of external stimuli

[30] G. R. Twiss, *A Textbook in the Principles of Teaching Science* (The Macmillan Company, 1917), p. 133.

and internal data is the necessary result of all curricular processes.

In an earlier discussion of teachers, reference was made to society in general as a source of information and means of training. The remainder of this section will be devoted mainly to society, other than teachers, as presenting data which are a part of every one's curriculum. What one learns by direct and varied contacts with others has been a recognized part of education for thousands of years. Among the Greeks, boys often accompanied their fathers to public places and listened to the discourses of their elders. Social life was a necessary part of the training of mediæval knights. In early modern times, young gentry were trained at the inns of court and by travel. With the development of the academy in Europe and America, there was special emphasis upon extracurricular activities which provided social experiences. In more recent years, this emphasis has increased until the social life of schools is a major aspect of school training. Outside the school, scouting and other forms of gang life supplement the social experiences of the school.

Social realism, as practiced during the centuries, while recognizing the humanizing effects of direct contacts with others, has not separated the associates of the flesh and blood order from those who are remote in time and place. Modern social realism, faced with an abundance of printed materials, ease of long-distance communication, sound-picture production, and other means of bringing varied social life to every one's home or neighborhood, has all but drawn aside the sheer veil which separates an individual from associates of any time or place. Yet, a person actually present exerts influences which are closed even to the man behind the microphone of the

radio. The person present can fit himself to his observer, he may give or take in discussion, work, or play. He may devote himself entirely to the observer; or, shrugging his shoulder, he may wither his observer by aloofness. By studying his observer, he may collaborate, as a teacher, in problem solving or creative work. He may, again as teacher, patiently listen to and aid in the evaluation of his observer's reactions. In any case he is a social force that must be reckoned with, if only because of his very presence.

Anatole France gave a charming, analytical account of other human beings as objects in his autobiographical volume, *The Book of My Friend.* From his mother, as the embodiment of refined sentimentalism, and from his father, a physician with anthropological interests, he tells us that he learned tender-mindedness and tough-mindedness, respectively. From the advances of a questionable man to a lady in white, he formed certain judgments about how society should be safeguarded. From Alphonse, the washerwoman's son, he learned about conventional class distinctions and the bestowing of gifts. From the attentions of a certain young lady, he seems to have learned not only the color of her eyes, but also a little of what dreams are made of. His fellow-pupils and his teachers, particularly one friar with more of a flair for ancient history than for boys, taught him much that was not in the course of study. Such examples of social realism reflect the contributions made by human associates to every human life.

It is often said that one should select associates from whom something can be learned. A difficulty with this advice is that one might learn too much from certain persons—they insist upon instructing all the time. They disregard the fact, as did the friar historian, that one is not always in readiness

for their variety of wisdom. They are like unmotivated assignments in books. Excepting for these bores, however, the advice can be accepted. Every one recognizes that socialization is one of the most important means of learning, not only as discussed in Chapter V, but also in the same ways that excellent teachers are instructive. They stimulate, raise problems, teach knowledge and skills, and consider one's readiness for learning. They provide, by allowing discussion or by the appeal of their deeds, for one's own self activity. They supplement the book, the radio, the work of art, and all other forms of social realism.

What Curricula Mean to Individual Pupils

Are knowledge and goodness always linked together? The answer of the scholar is that they are. Contrary to the view of Portia, the knowledge of what were good to do makes good deeds done. The acceptance of this ancient belief that knowledge and goodness move together is necessary for one who agrees with the foregoing discussion of curricula. The purpose of curricula is to achieve knowledge and its correlate, goodness.

The apparent falsity of this view is due mainly to two superficial judgments. First, there are many ignorant persons whom the world sets up as good. Second, there are many bad persons whom the world sets up as educated. Members of these groups are, to the scholar, both ignorant and bad. The well-meaning, ignorant person is bad, because he can not safely be trusted with any responsibility which demands more knowledge than he possesses. He is good as far as his knowledge enables him to weigh the outcomes of right and wrong courses of action. The difficulty with him is that his naïve

goodness in a minor rôle recommends him for a status in which such goodness is inadequate—he is like a good toy engine in a large car. His toy goodness, so to speak, becomes the source of badness, as soon as the process in which he works exceeds his power. He can become good in the enlarged endeavor only if his intelligence and opportunities will enable him to learn—only if he can attain sufficient knowledge to be good in this enlarged position.

The man whom the world calls educated and bad is, by any scholarly definition, ignorant. He is likely to have missed the essentials of a good curriculum, through either a lack of opportunity or a lack of intelligence, or through both. He may have passed for a master of certain curricular items, receiving his diploma for ability to gabble formulæ that were meaningless to him. He may have been bad, that is, dishonest and scheming, in even the show of learning that he flaunted to his teachers and associates. Such an "educated rogue" is in no sense educated. To him, a curriculum is without implications, *i. e.* it is meaningless, save as a device for specious and more or less deliberately deceptive attainments. He is like a well-decorated engine that pleases the tyro but agonizes the engineer. The engine is painted; the rogue is veneered. He can become good, only if he faces the facts of life and conducts himself as these facts imply—only if he has sufficient intelligence to realize himself through a curriculum that becomes a ruling feature of his life. Owing to the limitations of such a person's intelligence and the fatuity of a gullible world, he may go further on the wrong track than he could on the right one, but he could not do so in an ordered world where philosophers were kings.

As both knowledge and goodness are relative terms, the person who is educated for good conduct in one activity is

not necessarily prepared for good conduct in another activity. Even the scholar has limitations: he can not solve all problems or creatively employ all media of expression. The highest hope about any curriculum is that it will facilitate the good life of those who pursue it. The directions of this facilitation have already been stated in terms of the six mental functions. The relation of these functions to curricula can now be shown.

At the beginning of this treatise conduct was named as the basis of education. Education has also been defined as a normative process in which an improvement of conduct takes place. If education is defined in terms of improving conduct, then the improvement must be in terms of types of conduct. Conduct consists of multiplex combinations of problem solving, the acquisition and use of knowledge and skill, the practice of social competence, creative activity, and æsthetic experiencing. Education consists, therefore, of activity in combinations of these functions of living. Curricula are the media through which such activity operates. To the extent that an individual becomes proficient in curricula, to that extent does he become a good person. Such proficiency, *i. e.* such a multiplex form of knowledge, is goodness. Always remembering the relative character of knowledge and goodness, one may then conclude that they are always found together.

The fundamental meaning and purpose of a curriculum can, therefore, be stated only in terms of effects which lead to improved existence with reference to values, ideals, and aims of life. The quality of curricular achievement depends upon the purposes embodied in curricular items and experiences. These experiences depend, in turn, upon the pupil's persistent efforts and ability to make a curriculum a part of

himself and not merely a structural veneer. The pupil's experiences depend also upon the directing, organizing, motivating ability of his teachers in articulating the curriculum with the whole life of pupils. To individual pupils, curricula are multiplex, and their meaning and purpose require a correlation of these five items—aims, materials, pupil ability, teacher ability, and the whole life of pupils.

SELECTED REFERENCES

(See references at the end of Chapter IX, pp. 367–8.)

CHAPTER IX

PSYCHOLOGICAL ISSUES IN THE SELECTION AND ORGANIZATION OF CURRICULA

Attitudes Toward Curricula

A FUNCTIONAL attitude toward curricula—an attitude which maintains that curricula exist only to improve conduct—has been fundamental and dominant in every significant period of history.[1] Improvement of conduct proceeds in the six directions already described. Despite the general acceptance of this attitude, it has passed through many vicissitudes, proceeding at times in only one principal direction and at other times going far astray on ever-narrowing lanes of its numerous tangents. If pupils' attitudes toward curricula remained the same whether or not they hold curricula useful or useless, the present topic would have no place in educational psychology. As shown in the preceding discussion of motivation, the fact is that motives control not only the quality but also the quantity of pupil effort. Motives lead to action in curricular affairs as truly as they do in crime or industry. Attitudes toward curricula determine whether or not either teachers or pupils can find sufficient motives for curricular activities. The operation of the functional attitude in contrast with other attitudes will be described in this section.

[1] *Cf.* W. L. Uhl, *Secondary School Curricula* (The Macmillan Company, 1927), Chapter XVI.

A manufacturer of confections has recently coöperated with the schools of his city in providing courses for his employees in literature, music, home economics, and other subjects. When educated only in these subjects, which have no direct relation to their factory work, the girls soon earn as much as ordinary full-time workers. He asserts that there is only one form of schooling that counts, and that this is education for life. What he means by this assertion is plain to one who observes that his plant formerly maintained a corporation school which provided technical industrial training for employees and that he has now discontinued that specific training and has provided general training instead. He believes in general functional education rather than in specific vocational training and for two reasons: first, the girls in his factory now rise above the dull and grinding routine of their work; and, second, the annual labor turnover in his plant has been reduced to five per cent, the normal for this occupation being upwards of 100 per cent. The experience of this factory is that the day's work of the employee has been her life, and that this life was found wanting until she was educated for a fuller life.[2] This employer holds that curricula should enrich life by educating pupils in subjects that change conduct without directly affecting technical skill.

Two recent surveys have been conducted to discover the needs of industries as a basis for planning courses of training. In a survey of the attitudes of industrial leaders,[3] eighty-one out of ninety expressed the conviction that more cultural

[2] Nathaniel Peffer, *Educational Experiments in Industry* (The Macmillan Company, 1932), pp. 98–106.

[3] F. C. Caldwell, C. A. Norman (chairman), and John Younger, *Economic Attitudes in Industry* (Engineering Experiment Station, *Circular* No. 26, Ohio State University, 1931).

training and a wider social outlook are essential. Their suggestions for attaining these ends included courses in the following subjects, which are here catalogued in order of votes: economics, history, English, psychology, public speaking, business administration, social science and social service, and accounting. Another recent survey of technical needs of industrial workers places greater emphasis upon training for specific functions, particularly in production divisions of industry.[4] Although the majority of the graduates of two-year strictly technical schools disclaim a handicapping of their careers by an absence of the broader general training given in four-year engineering schools, employers were somewhat negative in their judgments about the adaptability of these technical graduates to advanced positions in industry. Whether this attitude of employers is strongly influenced by traditional notions about short-course graduates is not indicated in this report. Both employers and graduates give abundant evidence that these institutes produce skilled workers. Data contained in the report show that 87.7 per cent of these graduates remained permanently in work for which their training specifically qualified them or in closely allied work, while only 69.2 per cent of the graduates of four-year engineering colleges did so. Whether the four-year graduates would still have shown greater adaptability if they had pursued only the shorter course is not stated. The first of these surveys corroborates the experience of the manufacturer of confections. The second survey, which deals with highly technical occupations, emphasizes curricula which yield highly technical knowledge and skill; it gives less atten-

[4] *A Study of Technical Institutes* (an investigation conducted by the Society for the Promotion of Engineering Education, Lancaster Press, Lancaster, Pennsylvania, 1931).

tion to general courses, save as they are prerequisite to technical institutes. All three cases illustrate a fundamental attitude toward curricula, the attitude that curricula change conduct in desirable ways.

A similar attitude is exhibited by Hedrick in discussing "What Mathematics Means to the World." [5] In this article he presents mathematics as the branch of knowledge and skill which enables pupils to solve many of the problems which now confront them as individuals and as members of society. Passing over the common applications of mathematics to physics, engineering, insurance, and architecture, he cites the applications to chemistry, social science, home economics, and everyday finance. In contrast with such useful mathematics, he mentions that which is taught chiefly for discipline or for logic and also that which is now presented by teachers one-third of whom in certain States have taken "not one hour of mathematical work in college." He insists that mathematics is one of the means by which conduct in all its forms can be improved.

One attitude only toward curricula is presented in the foregoing paragraphs. As stated above, this attitude has been uppermost in every advancing period of history. It is the functional attitude. This attitude, which has been urged repeatedly in this treatise, does not require its adherents to reject all curricular items that can not be applied immediately to a nonacademic problem. Instead, it requires that whatever is included in a curriculum be essential for such understanding of the subjects themselves as life situations may reasonably be expected to demand. For narrowly specialized demands, highly specialized curricular items may suffice. For

[5] *Mathematics Teacher,* XXV, 249–263 (May, 1932).

life in general, including the marginal activities of the specialized, routine worker, appropriate samplings of the essentials of many subjects are needed for profit as well as for pleasure. The broader the life of the pupil is to be, the broader his curricular experiencing must be. While excluding everything that is useless, the functional attitude includes possible contributions from every department of knowledge.

The prospective technical worker may properly ask what technical knowledge and skill is of most worth in the work which he is about to face. If such training is essential before he begins work and if he has time only for such training, he must pursue it exclusively. As such training is always preceded by general education in many departments of knowledge, his question must also include the time at which general schooling is to end. If curricula are functional, he is assured that general education as well as specific training will operate in his future conduct. He will recognize the fact that while general education will function in all six types of conduct, his specific training is likely to function slightly in more than one or two types of conduct. His life is unlikely to be effective or satisfying, save as he is a wage earner who can preserve his narrow existence by continuing to earn his wage.

The case of the technologist differs from that of the technician only in his broader scientific needs and in his slighter need for specific skills. The engineer's need for trigonometry, for example, is clear, but even he will find no need for all that is contained in the conventional course in trigonometry. He needs this subject in a somewhat specialized form just as the technician needs specialized, applied engineering courses. In trigonometry for engineers, there will be included those formulæ "whose usefulness can be made apparent, or

at most those which we ourselves know to be necessary." [6] The application of this principle leads to the omission of certain conventional topics, as DeMoivre's theorem and infinite series, and the addition of needed topics as the drawing of trigonometric graphs.[7]

General courses, from the nursery school through the graduate school, have been subjected also to scrutiny from the same functional point of view. Whatever remains in curricula simply because it has long been a favored hurdle for immature human beings, stands either as a protest against the prevailing view or as a monument to bygone days when such material had significance. The adoption of the functional attitude does not necessarily exclude any subject or department of knowledge. Instead, it leads to selection of materials which are believed to be necessary for effective conduct at various levels of education and in various significant economic, social, and cultural pursuits. What is meant by the term significant pursuits depends, of course, upon the standards of value adopted by those who judge the pursuits. A discussion of this point is beyond the scope of this treatise.

One of the most venerable functional attitudes toward curricula is that which separates schooling into education and training. Education then consists of improvement in all types of conduct for life in general and for specialized literary, technological, or scientific pursuits, while training consists of improvement in specific skills required for a given occupational niche. This distinction which has been defended by many scholars, including Aristotle and Matthew Arnold, has

[6] E. R. Hedrick, "The Teaching of Trigonometry for Engineers," *Journal of Engineering Education,* XXII, 299–310 (December, 1931).
[7] *Ibid.,* pp. 301–304.

recently been emphasized by Nock.[8] Adherents to this view have usually contended that schools should be devoted to education on the ground that apprenticeship will provide training. In recent years they have asserted also that training, owing to its specific and changing character, can not be offered except in highly specialized courses, and that, even then, few schools except those of the industries concerned can provide suitable training.[9] The amount of general education to be pursued by a given individual will depend upon his qualifications, the character of the training to be undertaken, and the nature of his future occupation. Nock insists that, by attempting to provide both education and training at the same time, American schools have failed in both. His plan consists of doing either one or the other thoroughly at any given time and of attempting only one if a lack of facilities and time make such separation unfeasible. If this view is adopted, all education, the rudiments and what goes beyond, must be restricted to teachers and pupils whose combined efforts produce improved conduct during the period of schooling as well as afterward. This conclusion is a necessary corollary to the discussion of the dynamic quality of knowledge in the preceding chapter. The same is true of all training. If, therefore, one adopts the belief that every child should have schooling commensurate with his equipment, interests, and needs, the distinction between education and training classifies courses, first, in terms of the probable destinies of the pupils—assuming that they can be directed—into suitable courses, and, second, in terms of the type or types of conduct which they improve.

[8] Albert J. Nock, *Theory of Education in the United States* (Harcourt, Brace and Company, 1932).

[9] For a discussion of this point see Peffer, *op. cit.*, and the engineering investigations already cited.

Education, as defined by those who hold this view, provides thorough knowledge of basic facts and principles which are applicable to all types of conduct. For specialized skills, further practice is necessary; the educated person is not necessarily skillful in any particular activity which requires specific skill. As it is possible to possess skill without thorough understanding, a skilled worker need not be educated. In the past, scholars valued education more than training, because of the wider applicability of education and because training fitted pupils only for menial tasks. In an age which emphasizes skilled occupations and when skilled workers are relatively scarce, training for the masses is likely to be more highly valued than education, as far as industry is concerned. Although this view is apparently tenable only by those who frankly advocate an educational aristocracy as did Aristotle, its modern adherents, as Nock, contend that they are democratic and cite Jefferson's similar view in their support.

Whatever the merits of this view may be, its psychological implications can be stated. Education, to measure up to the foregoing discussions, must be a means of self-realization in terms of conduct. Education for any person can not be attempted beyond the point at which such self-realization is possible. Education must, however, proceed far enough to enable every one to assume his responsibilities as a social individual; if such an amount of education is impossible before he begins specific training, it should be provided later. If one adopts this view, one must, therefore, be on guard especially against the assumption that education is an entity or veneer which can be taken on once for all and which can evermore remain as an individual possession. Training will frankly neglect types of conduct which are not specifically necessary in the performance of a given task.

Many by-products of the functional attitude toward curricula have effectively blocked civilization. What has once had functional value has many times continued beyond its period of usefulness. Many schools of the early modern period, as examples, continued an exclusively classical training curriculum into an age in which science was at least equally significant. This continuance of what had been valuable during the middle ages proceeded to a point so far removed from functional classicism that all scholars denounced it, while pedants defended it as a means for conquering the wayward spirits of youth. This pedantic attitude was, of course, functional in the sense that otherwise useless material combined with birch rods could break the hardest spirits; the ablest boys from Erasmus to Franklin supplemented their school curricula by more significant curricula which were offered outside the school. As Rabelais satirically contended in his story of Gargantua, the old "muzzled dolt" who taught boys useless "mealy stuff" mortgaged the years of youth to teach ineffectively that which had to be forgotten by all save pedants as soon as school was over. Whenever such pedantic dolts as Rabelais described determine curricula, the poorest possible psychological conditions exist for pupils: the subject matter is known to be futile, motivation is rarely present, there can be but little intelligent direction of effort, and there is a minimum of persistence when difficulties arise. In modern factories, antiquated equipment is known as frozen machinery; schools in any progressing age have, by analogy, a strong tendency to inherit frozen curricula.

The tendency to glorify what has once been functional is not confined to teachers. The laity is inclined to assume that, if one generation or even an individual has risen to greatness under given curricular conditions, all other per-

sons could rise equally to eminence if the same curricular conditions could be reproduced. The fallacy of such reasoning is the same as that pointed out in discussing the rating of teachers in Chapter VI; the total situation must be considered, and the alteration of any factor of the situation alters the emergent. This notion of curricula as magic still prevents many children from following curricula for which they have strong and legitimate motives.

Encyclopedism, or the attempt to master all knowledge, is another by-product of the functional view. It is no longer present in its earlier sense. Comenius, an encyclopedist of the seventeenth century, would now have to content himself with all knowledge about a few divisions of thought. The tendency to regard a subject of study as important in its entirety, because of the importance of certain parts of the subject still leads pedants to conclude that, if a foreign language is important for the reading of literature, all the grammar and history of the language is also significant; or, if home economists need any basic chemistry, they should cheerfully master all basic chemistry, and so on, even to the sacrificing of that which is important, for all varieties of pedantry. Psychologically, this pedantic tendency often leads pupils to conclude, however, that, since much of a given subject is unimportant, the entire subject can be neglected. The ensuing conflict of attitudes produces an emergent that baffles teachers and drives pupils into either rebellion or cowed compliance. Instead of leading to mastery of curricula, it leads pupils to ingenious subterfuge, as cheating, skillful adoption by pupils of the teacher's phrases without an understanding of those phrases, slighting of work, and fawning praise for worthless facts. Teachers, in turn, vainly hope that their curricular

materials, though without significance to learners, will correct the learners' undisciplined tendencies and, some day, lead to universal reverence for knowledge. If such useless materials can not be imposed fully in one course, teachers plan additional courses which provide for repetition of the useless, ever hoping that if enough zero accomplishments are amassed the emergent will be academic prowess. This structuralistic attitude has the additional defect of leading to numerous divisions of knowledge which are carefully segregated and across whose boundaries pupils seldom see.

The functional attitude toward curricula enables each subject to make its integrated contribution to each of the six forms of conduct. It breaks down the artificial division of subject matter into the cultural and the practical, and educative differences arise only in terms of the forms of conduct generated during the learning and in later life. As every one normally engages at times in vocational conduct and in nonvocational conduct at other times, so the pupil should at times assume a vocational attitude and at other times a nonvocational attitude toward his educational activity. The functional attitude does not require an elimination of drill, for, as indicated in Chapter III, drill is essential and economical in learning. Drill itself becomes truly functional. America's curricula might consist of problems and data which are as inutile for most persons as the life and manners of Abyssinians. Skillful teachers might arouse interesting activities in such materials. The functional attitude requires instead that, as pointed out in a later section of this chapter, curricula consist of a series of materials which articulate with American life, and which are so experienced that progressive conduct is the necessary concomitant of learning.

The Dependence of Curriculum Values upon Pupils

As pupil self-realization is a fundamental criterion of curriculum values, the adaptation of curricula to pupils and of pupils to curricula is necessary. First, the remoteness of a subject from the pupil is an indication of the psychological problems of this adaptation. Previous experience, present circumstances, and interests indicate the amount and nature of the background which must be provided for self-realization and, therefore, the distance from the pupil to curricular materials.

Hosic, in *Empirical Studies in School Reading,*[10] illustrated the bridging of the gap between the remoteness of a poem, *The Chambered Nautilus,* and children's previous experience. In this case, the bridge was a long one, and the route to it was circuitous. Finally, however, he elicited from a pupil the comment that, in this poem, which is usually read with little understanding by sixth-grade pupils, the poet means, "that you should build yourself up in character." In this case, the teacher had already found that the principal remoteness difficulty was due to a failure to understand the poem.

The present circumstances of pupils, as affecting the remoteness of school work, are especially clear with materials which involve creative activity or æsthetic experiencing. In such cases, self-realization can take place only after pupils have been led from their remote expressive and emotional conditions to a condition that is hospitable to the situation at hand. One class was canvassed intimately in this respect by the writer previous to the presentation of Lowell's *The Vision of Sir Launfal.* He found that two boys were violently angry

[10] Teachers College, Columbia University, Contributions to Education, No. 114, 1921, pp. 131ff.

with each other and had left a fistic combat unsettled, one girl was distressed by an early morning quarrel between her parents, another was disturbed by the loss of her purse with luncheon money, several were in hilarious spirits on their return from a football rally, and so on through the class. The teacher herself had just finished the weekly collecting of savings from her thrifty pupils. A short and apparently adequate bridge from these diverse conditions to a hospitable attitude was constructed by the teacher when she commented entertainingly on the complicated nature of modern life and suggested that she and the class give their troubles a vacation and go dreaming with a knight.

In other cases, the pupils' remoteness difficulty is due directly to a failure to understand the significance of the material and indirectly to a lack of motivation. "Why do we have to study all this stuff?" This is a remoteness difficulty which Hedrick encountered in teaching trigonometry to engineers.[11] In graphical work, he bridged this difficulty by reference to wave motion and sound, and found that, even at the cost of additional time and effort, this bridging changed pupils' work from profitless drudgery to significant mathematics. A well-known story relates an instance in which the wandering interests of schoolboys were brought to a realization of English history by a simple admonition to read nothing of the next day's lesson, as it dealt with King John, a character so black and corrupt that no boy should know about him!

Second, the needs of pupils as felt by themselves affect the values derived from curricular experiences. Although the incidental felt needs of pupils form an obvious basis for many educative activities, as stamp collecting in relation to

[11] *Op. cit.*

history and geography or the doll house projects of primary grade children, there are additional needs which have to be aroused before they can be felt. The curiosity and sheer desire for knowledge of pupils are additional bases which can be used. Such needs often arise incidentally, *i. e.* without special effort of schools. Other equally potent needs can be aroused by teachers, and, when so aroused, these needs are as significant and dynamic as when aroused by other persons. An example of the use of such needs has just been cited from Hedrick. Other examples are numerous. Psychologically, all such needs become educationally valuable as they reduce the remoteness of important subject matter, increase the drive of the pupil and the pull of subject matter, and as they facilitate continued experiences which utilize what has been mastered.

Third, the limitations of pupils' time, energy, and capacities restrict, perhaps unduly, their adaptation to curricula. The limits of pupils' achievements are seldom if ever reached in any of these three respects, and improved teaching yields improved curricular reactions through a better approach to materials. This improved teaching increases the pull of the learning situation and thus increases the pupils' willingness to devote their time, energy, and capacities to the learning activities required in the mastery of the materials.

The pupils' possible and probable reactions to new curriculum situations can be predicted and properly provided for only after accurate judgments have been made of their capacities. After discussions and tests, together with judgments of previous work, a suitable curriculum for each pupil needs to be planned—sufficiently rigorous for the ablest and sufficiently easy for the slowest. The difficulty here is one

that has already been mentioned; that of determining the level upon which a pupil is responding. The pupil may, by dint of effort, memorize and appear by formal responses to know thoroughly that which he knows only by rote. This is not self realization, and it does not indicate proper adaptation of the curriculum to the pupil. Such a pupil's limitations require a much slower approach to abstractions—words, signs, formulæ, etc.—by way of familiar, significant materials. More difficult interpretations and other abstractions will come later. Much of this approach can be made effectively for either fast or slow pupils vicariously through discussions and the reading of books, as Coryell has shown.[12] Similarly, in the development of certain concepts of physics in high school pupils, Black found that, by exploring the background of the pupils, he could more effectively teach such concepts as mass, weight, and gravity.[13] As in many other prelearning situations, he found that pupils' erroneous notions impede further learning, unless the approach is skillfully planned and a new set of interpretations developed. He found also that certain concepts are so difficult that ordinary methods in science teaching are inadequate. What is necessary is a method which will enable the pupil to assemble his relevant, correct experiences and enable him to move forward by means of significant data of his own experiencing to the limit of his maturity and needs.

[12] Nancy G. Coryell, "Developing the Inquiring Mind Through Reading and Thinking," *High Points,* Vol. XIV, No. 7, September, 1932, pp. 15–21.

[13] Oswald F. Black, *The Development of Certain Concepts of Physics in High-School Students.* See *A Program for Teaching Science,* National Society for the Study of Education, Thirty-first *Yearbook,* Part I (Public School Publishing Company, 1932), pp. 69–72.

The Dependence of Curricular Values on Contemporary Life

In any continuing and progressing culture, curricular values have two necessary characteristics: permanence and change. Permanence is necessary for the continuance of the culture that has been fostered through the ages, but it is necessary only so far as it holds fast to what is still good. Change is necessary for the adaptation to new conditions and the use of new data which every progressing period of history brings. Our present problem is not that of formulating criteria by which the permanent and the changing values can be judged; instead, the problem is that of examining the old and the new with reference to psychological issues involved in pupil realization of curricular values to be derived from both the old and the new.

The characteristics of old cultural materials render many of them particularly difficult for immature and inexperienced learners. The old academic culture is systematized and rationalized into abstractions, or principles and formulæ which are basic, but which are difficult to appropriate. The old culture tells us that there is a happy mean between extremes, that there are arithmetical and geometrical series of progressions, that there is a solar system of which the earth is a very small part, that the exportation of bullion should not be prohibited, and so on. Before any of these concepts or principles can be realized by a pupil, he must be both mature and experienced. They fall into the category of the valuable but remote. Other items of the old culture are not only remote, but also valueless, save as they provide perspective: nature abhors a vacuum, meats spontaneously germinate maggots, heavy bodies fall faster than light bodies, and kings have a

divine endowment of rights over their subjects. Only by a vivid background which serves as a reconstruction of life needs which are significant to pupils and out of which these concepts emerged can they now be realized by most learners. As concepts which are still tenable can be demonstrated by present-day conditions, they may be arrived at either directly or vicariously. Old concepts which are untenable can, for the most part, be arrived at only vicariously. In either case the remoteness from immature, inexperienced pupils is clear. As many old cultural formalisms have been acquired as badges of intellectual aristocracy, their relationship to learners is, for this reason, still further removed, and they suffer accordingly in the opinion of the uninstructed.

The characteristics of new cultural materials, though largely derived from earlier conditions, render many of them readily approachable by learners. These new materials often lack systematization, rationalization, and convenient formulæ by which they can be applied. English usage, grammatical nomenclature, forms of social conduct, judgments about political issues, vocational problems, and so on, are constantly changing and, in many cases, conflicting. Even though a teacher, parent, or friend may rationalize or set up principles about these matters, there is still confusion about them in the minds of pupils as well as adults. Owing to this lack of generally accepted fixity, such new materials suffer in the opinion of the older, instructed generation. As the opposition of the elders to the practices of youth is sometimes a spur to the young, this condition probably increases the popularity of these new materials when they are treated freely and with due consideration for changing practices. In other cases, new materials consist of short-cuts to improved conduct. Tables of logarithms, interest tables, tables

of the contents of cisterns, bins, silos, and the like render many circuitous paths of the past unnecessary. Other short cuts are now used in reading, typing, modern languages, applied science, and other subjects. These short-cuts, though almost invariably opposed by conservatives, have an appeal of practicality to the learner and reduce their remoteness from him. Where correctly derived and applied, they facilitate rapid progress and, as in the case of logarithms and other devices, leave no serious gaps in the education of the learner who accepts them ready-made or with little explanation of their derivation.

Another objection of conservatives to new culture is that much of it applies to skills and knowledge needed in occupations which were regarded as illiberal by the sages of two thousand years ago. Youth sees in these new materials the keys to economic competence, which is important in social competence in general. Consequently, such cultural items as knowledge and skill in agriculture and industry in general yield strong motivation in learning. That other forms of understanding, including a better grasp of even a chosen vocation, are neglected by learners may be due to the remoteness of older culture as presented, as well as to the appeal of the new and a sheer desire to escape from that which has been found good in the past.

Contemporary life needs go far deeper than is indicated by the foregoing discussion. As Tagore has said: "It is imperatively necessary that man should add at every age a new mansion to his palace in order to welcome with proper ceremonies the new guests who come with gifts that have to be harmonised with his past inheritance." [14] In a democratic

[14] Rabindranath Tagore, in *Education and Leisure,* edited by S. E. Lang (J. M. Dent and Sons, 1930), p. 39.

commonwealth, more persons have need for a common and a comprehensive grasp of direction of the total contemporary life of people than in a commonwealth of sheltered people whose views are dictated and whose actions are directed arbitrarily. For this reason culture, as the total knowledge, skill, and life of the nation, has a broader function in education than it has in a nation where almost every one is a follower in even the details of life. To understand contemporary civilization, one must be inducted into curricular situations whose values affect and, after attainment of them, control all the six interlocking forms of conduct described in Chapter III. The need for so broad an understanding of contemporary culture necessitates a close functional approach to this culture in order that it can be experienced and mastered in sufficient amount and quality. It must strike the emotional currents of pupils' lives to facilitate its realization. Briefly, then, curricular values, to meet contemporary conditions, must be an outgrowth of the life needs of pupils which lead them to a recognition of both the permanence and change of cultural materials and the significance of both the old and the new in our lives.

Unified Experience through Departmentalized Curricula

Curricula may be likened to a forest in which the trees must be regarded together as belonging to the forest, while the forest must be regarded as composed of trees whose peculiar characteristics distinguish the quality of the forest. The trees must not hide the forest, nor may the forest hide the trees. In this respect, two pairs of tendencies characterize the experiencing of curricula. One pair of tendencies leads

us either to put together the data of experience which belong together, or to keep those data apart. The other pair leads us to take whole experiences apart in a search for particularized data, or unanalytically to leave those experiences as unwieldy masses.

What, then, is the problem? If the better course be taken, we see relationships between items which belong together and weave the items together into manageable wholes. Also, if the better course be taken, we analyze experiences which appear as wholes and search for significant items which can then be more conveniently used as separate items or understood as parts within the total experience, or within different wholes that may then be formed. In actuality these two courses are pursued as parts of the same process: inductively, we seek relationships between separate items; and, deductively, we seek the items which have been rightly or wrongly related. Other characteristics of induction and deduction will be discussed in the following chapter. The problem here is that of examining curricula which have been organized to provide for both aspects of this complex situation.

The problem of relating our experiences—of bringing the trees back into a more clearly discerned forest—begins as soon as selfhood and other incidents of life gain their identities. Thereafter, progressive experiencing consists largely of the discovery of new identities, which, if ever made meaningful, must be brought into relationship with one another and with other experiences. The aspect of distinguishing new identities—the trees and their characteristics—is often less acute in schools than the aspect of relating the identities—still being able to see the forest—after the identities have been found. The aspect of relating identities is so acute in the conventional elementary

school that programs of unified life experiences have been devised as correctives of the tendency to keep apart the items which should be put together. Examples will next be cited to illustrate the fulfillment of both of these aspects. Later, psychological principles of the selection and organization of curricula will be formulated.

The Lincoln School of Teachers College, Columbia University, has provided, through its staff, a detailed account of examples of the unification of curricular experiences for pupils of Grades I to VI.[15] The general plan consists of the coöperative evolution by teachers and pupils of large units of study supplemented by smaller units, all based on life situations of pupils. The criteria for selecting and organizing these units are real life significance, comprehensiveness, stimulative value for each individual, progressive training of pupils, social value, relation to progress in tool subjects contributory to the unit, and the value for desirable habits.[16] A first-grade unit, "Animal Life on the Farm," grew out of the children's vacation experiences and contributed to thirteen types of outcomes, as reading, science, and arts—fine, household, and industrial. A small amount of number work was done, although the general principle of the school was that those very capable pupils should not develop arithmetical skills long before they are needed.[17] This large unit was approached through general, unanalyzed experiences, and it led to contributions of detailed items from the past and the continuing experiences of the children. Individuals and also committees volunteered or were delegated to build a house for a hen, to construct a table or to make a sunset picture

[15] Lincoln Elementary School Staff, *Curriculum Making in an Elementary School* (Ginn and Company, 1927).

[16] *Ibid.*, Chapter III.

[17] *Ibid.*, pp. 58–73 and 285.

for the farmhouse, and so on. In these ways, both the discovery and the relating of identities were provided for and continued as a process of interweaving parts and wholes into intelligible, related items.

In the sixth grade, a unit on books was evolved—"How Man has Made Records or Books through the Ages." [18] On the teacher's side, this unit grew out of a desire to correlate the teaching of printing and the making of a hand-sewn book with history, geography, and English, and to make them all more meaningful. On the pupils' side, the unit grew out of a discussion of their own experiences in recording their affairs in "The Third-Grade Newspaper." This lead to the inquiry, "How did books come about, anyway?" Although this study was unified by the problem, it contributed subject matter which is ordinarily presented in many different departments. In English composition, reports were made upon specific problems, as "What are tally sticks?" "Who was Gutenberg?" "What does a paper mill look like?" The usual opportunities for making such work exacting and educative were, of course, possible. In geography, localities in which early records were made came into a new relationship. A visit to a paper mill led on to such topics as the number of paper mills and their locations and then to forest conservation. Similar educative ramifications occurred in other departments of knowledge. Simultaneously, smaller units and other basic materials were used to enlarge curricular experiences and to ensure measurable proficiency in the all school subjects.[19]

The long unit procedure described by Morrison [20] has cur-

[18] *Curriculum Making in an Elementary School,* pp. 198–219.

[19] *Ibid.,* p. 217 and Chapter VII.

[20] Henry C. Morrison, *The Practice of Teaching in the Secondary School* (University of Chicago Press, 1926).

ricular significance in meeting the problem of this section in all higher levels of instruction of schools and colleges. In this procedure, which will be discussed more fully in Chapter X, the approach to each unit can be made in a way similar to that used in the examples drawn from the Lincoln school. This gives an experiential setting which enables the pupil to unify his previous study and the materials of the given unit. Thereafter, the basic understandings or controls needed by the pupils for the unit are mastered. Beyond these, there are numerous possibilities for individualization and coöperative evolution of the materials of the unit. Finally, after the assimilation of the necessary material of the unit and of that worked upon by individuals, the organization of all this into a manageable whole is provided as each pupil prepares his report on the unit. Materials, though departmentalized and including provisions for drill and thorough mastery, are studied with a unifying purpose both as parts and wholes. In terms of the simile, the trees and the forest become discernible and meaningful.

Principles which underlie the unification of experience through departmentalized curricula can now be stated.

1. Materials should be selected for their real life significance for pupils. This principle requires teachers and other curriculum makers to select materials which can be related to pupils' past experiences and which will stimulate progressive conduct by continued use of these materials.
2. Basic materials should be selected by experts. The importance of basic controls is too great to be allowed to depend upon materials which have been hastily gathered and thrown together, when the supply of excellent, well-organized material is as adequate as at present.

Few teachers or administrators have either the time or competence to select and organize basic materials; their work as curriculum makers consists instead of providing approaches to and applications of basic subject matter and in otherwise supplementing the organized materials.

3. Materials should be organized so that they can be mastered in natural settings. This requires actual provision for the real life significance of the materials selected according to the first principle—materials must have real significance which the pupils can and do see.
4. Materials should be organized so that parts can be integrated with wholes. Curricular items are always parts of complex situations. Instead, of being approached and studied in isolation in the vain hope that pupils will relate them somehow, the items should be so organized that they can be studied only as related parts of a larger whole. Such organization leads to economical learning by applying the principle of paired associates. It leads also to seeing relationships, analogies, the development of good methods by pupils, upon which the transfer of training depends.
5. Materials should be organized to give meanings which will affect conduct. Isolated items are often meaningless; they acquire meaning when they are related or unified. Generalizations are often inapplicable; they acquire applicability when they are analyzed into particulars, so that the generalizations themselves can later be modified to meet specific situations.

Subject Matter Sequences

Subject matter sequences present psychological problems which can not be settled entirely by logic. Every one knows that the use of litmus paper to discover the presence of acid or alkali is simpler than the understanding of why litmus paper can be so used, or that turning on a radio is easier than the understanding of the data of sound and electricity which are involved in the radio. It is clear also that many formulæ can be used with ease, while the data as organized in deriving the formulæ can be used only with difficulty; for example, any college student can readily use logarithms, but he has difficulty in understanding the data that Napier used in deriving these numbers, which divide equally proportional numbers or quantities in arithmetical and geometrical series. Likewise, one can readily employ an abstraction as an explanation in saying that masses near the earth fall because of gravity, but the data which underlie this principle, its causes and operation in the whole matter of gravitation, are very difficult. Considerations such as these lead to the conclusion that the functional value of materials, apparatus, formulæ, and other abstractions can, in many cases, be learned more readily than the particulars upon which they are based. Although a logical approach to such matters might require an understanding of data and their relationships, it must be acknowledged that few persons, if any, need such an understanding of the short-cuts which they employ, and also that such an understanding can often be properly postponed in sequences.

In other cases, the advanced steps taken by man can be neither understood nor applied without comprehensive knowledge of their underlying data. To say to a child that economic

conditions are among the most potent causes of war would seldom yield little but words, even if the meanings of the separate words were known. The child would need data—information about living conditions, industry, commerce, unrest, and so on. This case is different from the instances cited in the preceding paragraph, because the child lacks the related background necessary for understanding or application of the principle. Therefore, the learner should proceed from the abstract to the concrete or *vice versa,* according to the total situation in which learning is taking place. At times, abstractions fully satisfy needs; at other times, abstractions are useless unless arrived at through a laborious background.

Owing to the general need for certain tools of conduct, every one must master a common body of curricular materials. Although much of this is very elementary, its range extends to all the six types of conduct. The elementary school is charged, therefore, with teaching a relatively undifferentiated body of material to heterogeneous pupils.

The reasons for this period of undifferentiated study are in part psychological. As a means of gaining controls of conduct which are necessary for every one, the elements of subjects such as language—written or oral, mathematics, science, art, social studies, and physical education must be pursued by every one, not exhaustively, but in their fundamentals. These elementary tools of learning are, therefore, pursued during the early period. This period is not, however, entirely undifferentiated. While all pupils pursue these elements, the manner of this pursuit is greatly differentiated for different pupils. All pupils in reading may, for example, read from the same basal reader, but good schools provide a rich variety of supplementary material which is read in different amounts and for different purposes, according to the abilities, in-

terests, and needs of the different pupils. This is true not only in schools which teach the subjects quite separately, but also in schools which unify all the subjects as described in the preceding section. A basal core of material is necessary for all; beyond this comes differentiation. A similar situation exists in arithmetic, where supplementary work provides practice according to the individual situation. Here lies the basic difference between the lockstep curriculum in which every one does the same things, and the curriculum in which every one acquires the same fundamental controls and supplements them according to his own abilities, interests, and needs.

As a consequence of the character of elementary school work, as just described, the psychological problem of pupils is, in certain respects, more difficult than it is in higher levels of differentiated subjects of study. Regardless of a pupil's interest in linguistic matters, he is expected to learn to read, write, spell, and speak correctly. If he goes later to the high school, he will continue these linguistic studies in the vernacular, but he may or may not study foreign language and literature. In the elementary school, he will study mathematics, but he may avoid this subject in high school. In the elementary school, therefore, the teacher has the problem of sufficiently differentiating the activities of all pupils in connection with materials which are undifferentiated in name and in basic character; while, in the high school and the college, the teacher of subjects other than English and certain social subjects has only the problem of differentiating the work of the pupils who remain in school and who elect certain curricula. The ability of one pupil may enable him quickly to connect the basic character of a unit with his previous experience and master the fundamentals of a new

unit, while the ability of another pupil to see relationships and to master the new may be deficient. The rate of sequence from point to point must vary accordingly. With a given spelling vocabulary, there is need for differentiation of rate according to ability and effort, and also according to the individual difficulties with certain words. The interest of one pupil may drive him to concentrated persistence, while the interest of another may require much kindling from an inspiring teacher. A pupil may, for example, study geography with interest because of his stamp collecting experiences, but another pupil may attempt to avoid geography until the teacher tells an interesting story about the people of a certain area. The needs of one pupil may press him to a study of history as a background for prospective diplomatic service, while another may see no reason for studying history until his teacher definitely shows the vital relationship of history to pressing questions of the day.

By the junior high school period, or much earlier for many pupils, the differentiation of conduct values, in accordance with aptitude shown by that time, is possible. Then, the differentiation which has been made within the subjects taken by all can be extended, as stated above, to differences in the subjects pursued. Such differentiation will normally be progressive as pupils mature and as their aptitudes become more highly specialized. Accompanying this differentiation, there should be a continuation in secondary schools of curriculum offerings which are necessary for all, and which are either too extensive or too exacting in demands on maturity to have been finished in the elementary school.

The farther one goes in study, the greater is the necessary control of tools for further learning. On the secondary and collegiate levels, then, pupils are still pursuing certain basic

controls. In the Morrison procedure, as already stated, much basic undifferentiated work is required for each unit of work, but, beyond that work, there is differentiated activity for different pupils, as in the elementary school. On these levels, however, there is also differentiation of subjects as well as material within each subject.

Another problem of subject matter sequence is the common one in which certain courses are prerequisites for others. Although the necessity for arithmetic before algebra and for first-year Latin before second-year Latin is clear, many of the traditional sequences are not clear. As Benjamin Franklin pointed out in his *Autobiography,* the prerequisite of Latin before other romance languages may be reversed, as the modern romance languages might properly be regarded as prerequisites for Latin. Franklin's argument was that interest as well as subject matter is important in this sequence. In some cases, two subjects can be pursued at the same time, although one might be useless or impossible without the other, as writing without spelling or physics without mathematics. In still other cases, there is a possible prerequisite condition, although courses, as organized, disregard this condition. This point is emphasized by Thorndike in his discussion of algebra.[21] Consequently, students who have pursued a subject may find little use for it, even though it might, by better organization of sequences, be of great use. This situation suggests that the possible transfer of controls from one course to another should become a normal condition and that, where provision has been made for it by requiring prerequisites, use be made of the available materials and skills which might be transferred. This would cause the

[21] E. L. Thorndike, *et al., The Psychology of Algebra* (The Macmillan Company, 1923), Chapter II.

pupil to reach backward into the work which he has already mastered as well as forward toward work which he expects to do later.

In the cycles of schooling provided by the different levels of training, many subjects proceed in a spiral fashion. Arithmetic may be treated first in an "elementary" way and a year or two later, in an "advanced" way. History, geography, and other subjects are often treated in the same manner. One's judgment about this point should be tempered by four considerations: (1) the possibility of completing the treatment of certain topics during the first study of them and, the drain upon time when they are studied in cycles year after year; (2) the need for such review as the spiral system provides, as in the fundamental processes of arithmetic; (3) the possibility that, since the work is to be repeated, pupils will not reach defensible norms of accomplishment in the lower grades; and (4) the dangers that, without a spiral treatment, pupils may not be able to grasp the possibilities of a subject until unduly late, or that they may be confused by too full a treatment of the topics of a subject during the initial treatment of them. It is possible, that on secondary and collegiate levels, orientation courses, as general science and college freshman courses, can enable students to gain quickly a notion of a broad field which they can then pursue intelligently and fairly comprehensively. The value of such orientation courses depends, as Thorndike showed in the case of algebra, upon the articulatory organization of both the orientation course itself and the courses which follow. In any case, individual courses as well as sequences of courses should be cumulative in the same sense that geometry is in its progressive use in later parts of what has been mastered earlier.

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CHAPTER X

PRINCIPLES OF LEARNING

The Nature of Learning

An understanding of the nature and principles of the learning process is of value to the teacher. The direction and facilitation of learning is the task of the school. Although there are many processes involved in learning, such as the speed of nervous conduction, over which the teacher has no control, there are likewise many equally important phases which are affected by external conditions such as the school and the teacher. Although the theoretical explanations of learning are somewhat numerous and not entirely in accord, especially in regard to the basic neural processes, it is fortunately true that these theories are not mutually exclusive and many of the functional aspects of learning are explained substantially by all. Certain principles of association are fairly well understood in a similar fashion by the majority of those interested in the psychology of learning.

Learning may be described as progressive conduct. Hunter, in discussing the nature of learning, has mentioned the following factors as some of the conditions usually found:

(1) Repetition of the stimulating situation.
(2) Change unaccountable on the basis of fatigue.

(3) Cumulative acquisitions.
(4) Retention of effects of learning.[1]

Granting that learning exhibits the above-mentioned aspects, the question immediately arises as to the basic factors present at birth upon which learning depends and from which it takes its drive. Two general points of view exist as to the nature of the beginning learner or infant. The first of these holds for an elaborate number of instincts, each directed toward a fairly specific goal and awaiting only the proper stimulation to be put in motion. If one makes this list of instincts extensive enough and the ends to which the instincts are directed specific enough, the place of the parent and the teacher is, indeed, a simple one. As a matter of fact, the complexity of our educational system is probably unjustified were this point of view correct. It happens that the second point of view, which is coming into increased favor and which has more experimental background to make it plausible, is almost diametrically the opposite of the first. It is true that individuals are born with some mechanisms functioning and ready to work. For the most part, these are vegetative processes only and are concerned with rudimentary activities. The infant's ability to control external situations or indulge in thinking is almost entirely lacking.[2] This latter theory does not assume that all individuals are exactly equal in learning capacity. It does not categorically deny the possibility of special talents and defects. Nor does it entirely obviate the possibility of differences which are due to sex,

[1] Walter S. Hunter, "Experimental Studies of Learning" in *Foundations of Experimental Psychology,* Carl Murchison, editor (Clark University Press, 1929), p. 564.

[2] Glenn Devere Higginson, *Fields of Psychology* (Henry Holt and Company, 1931), p. 354.

race, etc. It does, however, throw considerable emphasis upon the importance of the environment in the development of the individual. Since the parent and the teacher and the school are part of the child's environment, magnified responsibility is, by inference, put upon them.

Most psychologists do not deny the existence of some already organized reaction systems. The disagreement comes primarily in the elaborateness of these organizations. Gates [3] lists the following "instinctive" reactions which occur early and which may be mentioned here to give an idea of the fairly conservative point of view on this issue.

(1) Adjustment of the sense organs
(2) Seeking and accepting reactions
(3) Protective reactions
(4) Locomotion
(5) Vocalization
(6) Manipulation
(7) Mental activity

Beginning with some such equipment of fundamental reactions as the ones listed above, the child immediately exhibits the phenomenon called learning and even by the age of five or six on entering school, already has an elaborate individual history.[4] By the time he has reached adulthood, individualization has advanced even further and is marked. This individualization, however, does not imply differential genetics for each individual. The processes are substantially the same. Knowledge of these processes is necessary because all are involved in the task of teaching. Guthrie has briefly summarized the important facts of learning. The ones listed below are, according to him, "recognized by common consent." [5]

[3] Arthur I. Gates, *Psychology for Students of Education* (The Macmillan Company, 1923), p. 123.

[4] *Ibid.*, p. 353.

[5] Edwin R. Guthrie, "Conditioning as a Principle of Learning" *Psychological Review*, XXXVII (1930), 412–428.

1. Conditioning. Conditioning will be discussed in detail later. It is a somewhat misunderstood but essential principle. It is related and similar to older notions of associative shifting, association by contiguity, etc.

2. Inhibitory conditioning. Inhibitory conditioning is the loss of ability of stimuli to call out responses under certain conditions such as the repetition of the stimulus subliminally.[6] An example is the acquisition of a liking for a food originally disliked which, when taken in quantities not sufficient to produce active nausea, finally excites no aversion.

3. Remote conditioning. Conditioning is not literally simultaneous. The conditioning stimulus normally precedes the response at varying intervals of time. Pavlov has reported that trace conditioning may occur with an interval of thirty minutes, but in actual school practice it would not be good procedure to follow the English word with the French thirty minutes later. The optimum interval between conditioning stimulus and response calls for careful study, and insufficient experimental work has been done on this point.

4. Effects of practice. The adage that "practice makes perfect" seems to have some psychological verification. Although not denying the tendency of practice to perfect certain sorts of connections, some psychologists hold that perfection may be attained without practice. The *Gestalt* principle of insight supports this theory.[7]

5. Forgetting. It is a well-known fact that one loses aptitude in a performance during a lapse of time. The rapidity with which forgetting occurs is partly a function of the number of original superthreshold repetitions and partly

[6] S. Smith and E. R. Guthrie, *Chapters in General Psychology* (University of Washington Press, 1921), p. 52.

[7] Wolfgang Köhler, *The Mentality of Apes* (Harcourt, Brace and Company, 1927), p. 219.

the nature of the act itself. Formerly the tendency was to explain forgetting in terms of physiological degeneration of one sort or another. A more recent hypothesis, and one which comports with many of the facts, is that forgetting may be explained also in terms of conditioning, particularly inhibitory conditioning. Thus, although there is no reason to question Ebbinghaus' studies on forgetting when using nonsense syllables, it must be recognized that it employs a restricted sort of material. In one sense, it may be said that everything in a systematic and meaningful organization of material is inhibitory to the remembrance of nonsense syllables except in so far as they may be organized into coherent systems. If the conditioning theory of forgetting be correct, there is reason to emphasize objectives in school procedure, and the central objective is cohesiveness and meaning in school activities. Teaching to secure good memory is especially necessary in such methods as that of Morrison where mastery is deemed valuable.[8]

6. Temporary extinction. Along with insight, temporary extinction is one of the phenomena which stands somewhat in contrast to the principle that repetition always fixes a performance. Guthrie notes that both Dunlap and Pavlov have described situations in which repetition serves to break up the habit rather than to fix it more firmly. Dunlap reports cases where annoying habits are broken up by forced repetition.

7. Emotional reënforcement. The importance of this phase of motivation has already been implied in the discussion in Chapter II. The reënforcement of learning has sometimes been termed "dynamo-genesis." Guthrie cites the ex-

[8] Henry C. Morrison, *The Practice of Teaching in the Secondary School* (University of Chicago Press, 1926).

periment with nonsense material which has been better learned by subjects under slight muscular strain than by those who were in a relaxed condition.

8. Irradiation. Irradiation may be termed the spread of conditioning over an extended area of the same class of receptor. Guthrie cites the example of the touch on the flank of a dog used as the conditioning stimulus for salivary secretion, producing by irradiation the same response when other parts of the body are touched. The more remote the stimulation from the original point of conditioning, the less vigorous the response. Avoidance responses to a hot stove are given not only to the sensation of heat in the identical place where the burn occurred which produced the original negative conditioning, but, in this case, the concomitant sight of the stove serves as a further conditioned avoidance factor.

9. Pattern. Guthrie gives the example of reading and remarks that, once the habit of reading has been acquired, the actual distance of the print from the eyes is not a factor of dominating importance. For example, one, having acquired general reading ability, sees the signboard at a distance of hundreds of feet and reads it as conveniently as the page immediately before the eyes. In contradistinction to the *Gestalt* point of view which holds for innate recognition or response to patterns, Guthrie maintains that, although present later, this characteristic depends upon learning.

10. Insight. The factor of insight has been mentioned. In general, it is the solution of a new situation by a novel and unpracticed response. There seems to be a cleavage of thought among psychologists as to the possibility of this phenomenon. Some maintain that the performances of the well-known Sultan [9] are all results of previous training and

[9] Köhler, *op. cit.*, p. 219.

not insight at all. This skepticism has additional substantiation in the fact that, for the most part, the life histories of experimental animals have not been well enough recorded to insure the statement that the activity could not have been practiced previously. Yet, it may be stated that the situation itself was likely novel, at least in its composite form, although not in its component parts. Thus, it may be possible to reconcile two apparently diametrically opposed points of view in the same way that the older theory of constructive imagination used to be employed to explain mental phenomena. The doctrine of constructive imagination held that it was impossible to imagine any creature, situation, object, etc., the elements of which had not been encountered in a sensory experience. One's description of a fabulous animal must be in terms of previously experienced objects although the combination might be entirely new. The inventor, likewise, does not reach out into chaos and bring forth a totally new creation, the elements of which are unknown. The inventor, as those who have studied Edison's work perceive, proceeds from the known to the unknown usually by a series of trial and error performances. The question then resolves itself as to what the mental process or the neurological process may be which produces the new combination.

There are certain other characteristics of learning such as curiosity, imitation, etc., which have been mentioned frequently. Many of these, however, have been called into increasing question in recent years or have failed of experimental verification.

It can be seen from the above discussion, which has been confined to the fairly well-established phenomena of learning and which has not attempted to go into the more minute theoretical explanations or the doubtful experimental ma-

terial, that learning is a complicated process. Previous mention has been made of the fact emphasized by Courtis that the school situation and particularly the teacher may not only not serve to facilitate learning but may actually interfere with it. After all, the teacher is only one part of an exceedingly complicated interplay of elements, all of which are involved in the learning. There is nothing mysterious about the fact that, since an individual is a teacher, his presence will aid automatically the learning processes of the child. In fact, such factors as harsh personality, incomprehensible diction, poor distribution of practice, poor assignments, etc., jeopardize efficiency of learning. Although complicated, learning is also specific. The ten factors which Guthrie has listed are all founded upon experimental evidence. Furthermore, their classroom analogues are not at all hard to discover. The translation of the general principle of dynamogenesis into specific rules for motivation has already been made. Likewise, the effects of practice in the common schoolroom procedure of drill have been noted. The effort of the student of educational psychology should be to comprehend these principles of learning. This will be done by reading such of the references as are available. It will also be enhanced by reflection on the principles involved and by efforts to supply original examples and make practical applications.

Capacity to Learn

It is of practical concern to the teacher to know the capacity which each pupil has for learning. This may be termed the pupil's "native intelligence." It is obviously impossible to estimate an individual's intellectual capacity solely on the

basis of the amount of work done, for the factor of motivation alone is sufficient to vitiate the accuracy of such an estimate. Intelligence tests, effective as they may be when used for the measurement of large groups, make the rather wide assumption that individuals, in general, have had about the same opportunities to gain educative experience and have shown nearly identical initiative in acquiring these experiences. In other words, it is assumed that intelligence has a tendency to be functional as well as potential. The further question arises whether capacity to learn remains comparatively constant during the whole of the individual's lifetime or whether it changes from age to age. Certain investigators, such as Terman, maintain that the intelligence quotient is comparatively constant. Such apparent discrepancies as occur may be explained on the ground of errors in the administration of tests or fluctuations in the individual's interest which cause him not to perform up to the limit of his capacity. Warren and Carmichael maintain, however, that the facts concerning the constancy of the intelligence quotient hold only for large groups and for averages and that in the case of individuals, material changes may occur with age.[10] On the whole, considerable evidence seems to support the point of view that, even in the case of individuals, the intelligence quotient is constant. It may be contended that, in the cretin whose potential intelligence is bettered by the administration of some glandular treatment, an actual change in capacity to learn has occurred. This view has merit, but it is possible to reconcile it with the theory that the intelligence quotient is constant by saying that the treatment made functional a potentiality which was existent all the time.

[10] Howard C. Warren and Leonard Carmichael, *Elements of Human Psychology* (Houghton Mifflin Company, 1930), p. 348.

Another item of consuming interest is the relationship between ability to learn in advanced age and in youth. One often hears the exclamation, "I am too old to begin now!" This statement carries the implication that after a certain age it is practically useless to try to master new lines of endeavor. Actual observations of the performance of adults seem, in some cases, to bear out this, for, in competition, they often do not do so well as younger people. When the factor of motivation is corrected for, however, a different result is apparent. Thorndike has made a thorough investigation of adult learning and has come to the conclusion that learning capacity is on the increase to somewhat beyond the twentieth year and thereafter declines, although slowly. The oldest people concerned in Thorndike's investigation were in their forty-fifth year. Taking the results of that experiment as a criterion it is possible to say that, from the ages of twenty to forty-five inclusive, learning capacity remains fairly constant with an apparent decline with advancing age. When it is recalled that, according to one theory of forgetting, interfering habits are the cause, it is possible partially to explain this apparent decline in capacity to learn. Thus, diminution of learning capacity may be not so much a loss in actual potentiality as interference of already formed habits which are continually increasing in number and complexity.

Does the capacity to learn increase in a gradual or a spasmodic fashion? Evidence seems to indicate that this growth is gradual.[11] While certain superficial phases of conduct seem to give evidence that capacity increases suddenly, this is a confusion of the process with the final functional product of the maturation itself.

It would be desirable in school practice if it were possible

[11] Gates, *op. cit.*, p. 97.

to pitch instruction in terms of the individual's actual ability to learn. It would likewise be advantageous to be able to give grades on this same basis. As a matter of fact, the so-called "accomplishment quotient" was an effort in this direction.[12] The idea of the accomplishment quotient was to give an individual credit for working only when his actual ability to work was taken into consideration as one variable in the situation. This introduced a factor of relativity into marking which was fairer to the student. Unfortunately, the errors of measurement involved in the basic data, when compounded several times in formulæ, make the accumulated error so large that the accomplishment quotient is of small practical value. It would be extremely desirable, however, to be able to judge students' performance not solely in terms of an absolute scale computed against norms but also in terms of innate ability.

Differences in capacity, in so far as they can be measured by the standard instruments now available, arrange themselves in normal distribution. No effort is made in this discussion to state the properties of the normal curve of distribution, but it is assumed that the student has had such work.[13]

It is probable that in actual schoolroom practice one is likely to err on the side of an under-estimation of the individual's capacity. Some of the norms in achievement tests are too low even when the fact is taken into consideration that they are based upon large group results. It might be valuable if such norms in achievement tests were grounded on the performance of average unselected groups which were

[12] *Ibid.*, p. 559.

[13] For those who have not had the advantage of a separate course in measurements, a treatment such as that by Garrett will furnish basic facts: Henry Edward Garrett, *Statistics in Psychology and Education* (Longmans, Green & Co., 1926).

known to be highly motivated and therefore working somewhere near the limit of capacity. As such, they would undoubtedly be more stimulating and would picture more closely the actual potential performance.

To what extent is capacity inherited? To what extent are accretions to knowledge and skill during the life of one individual likely to increase the capacity of that person's offspring? With reference to the first question, it may be said that generalized biological capacity is inherited. By generalized capacity is meant those mechanical and physiological traits of the human organism which are the fundamental bases of all conduct. But these traits become enormously modified by the process of learning during the course of the individual's lifetime. It is not likely that these changes are transmitted in anything resembling the form in which they have been acquired. In fact, it is difficult to conjecture, even in the imagination, the neural mechanism which would account for such transmission.

Reference has already been made to pedagogical procedures which attempt to take cognizance of inherent capacity by the segregation of students in homogeneous groups. It has been pointed out that not only are the errors of measurement upon which such segregation is made sufficient in magnitude in many cases to throw accuracy of differentiation into question, but that also the method of instruction tends to become so specialized as to turn out educational products which are atypical.

The effort to ascertain the extent to which students are actually working up to capacity should be continuous. Use of some such device as the accomplishment quotient may serve to assist. Sometimes a candid opinion that capacity is not nearly approximated can be secured by the individual's

own admission in a conference. The surest type of motivation is, as suggested in Chapter IV, to have him compete against himself. This is better pedagogical procedure than having him compete against the group because, in the case of the bright students, competition against the group is easy, and they tend to become bored; and, in the case of the dull, competition is hopeless, and the individual is unduly discouraged. In conclusion, it may be said that capacity is potential conduct which can be turned to any one of many directions by the learner.

The Learning Process

1. The physical basis of learning. Psychologists are practically agreed that in the learning process an association of some sort takes place. Formerly this association was commonly regarded as between "ideas." At present, the tendency is to describe it as occurring between "situations" and "responses." Thorndike, in discussing this, although not abandoning entirely the use of the term "idea," lays heavy emphasis upon the situation, the response, and the connection between the two.[14] Watson goes even further and confines his terminology almost exclusively to physiological terms.[15] Ragsdale has pointed out that materialism and idealism are similar in some respects.[16]

In Chapter II, there were set forth a few of the facts on the physical basis of conduct along with a discussion of some

[14] Edward L. Thorndike, *Educational Psychology,* Volume II, *The Psychology of Learning* (Teachers College, Columbia University, 1913), p. 19.

[15] John B. Watson, *Psychology from the Standpoint of a Behaviorist* (J. B. Lippincott Company, 1919).

[16] Clarence E. Ragsdale, *Modern Psychologies and Education* (The Macmillan Company, 1932), p. 28.

of the possible points of view as to the relation between mind and body. For the purposes of the present discussion of functional improvements or learning, attention will be devoted to experimentally founded principles stated as nearly as possible in objective terms. This is no novel procedure. Thorndike, in treating the growth of mental functions, deemed it valuable to reduce them to increases or subtractions in readiness and bonds rather than to a varying and mysterious mental potential.[17]

There is probably a real danger in an overly enthusiastic subscription to the physiological, purposive, or mental explanations of conduct changes. The true interest of education is the change itself.[18] Knowledge of the physiology of conduct has been of some advantage, especially the phases which induce teachers and parents to bring the child up to the maximum of learning potential by the removal of sensory defects, etc. It is further of value to the sophisticated teacher to know alternative explanations of learning. Certain of these will now be considered.

2. Theories of the mechanism of learning. Thorndike, writing in 1913, maintained that insufficient knowledge existed at that time to even attempt to describe the physiological foundations of mental functions.[19] Since this statement of Thorndike's, much work has been done on the neural basis of learning. It is still not possible to state the physiological foundation of all mental processes. As has been pointed out in Chapter II, a definite body of fairly well-established information is at hand concerning the action of

[17] Thorndike, *op. cit.*, pp. 188, 192, and 199.
[18] *Ibid.*, p. 67.
[19] *Ibid.*, p. 66.

nerve unit preparations, muscle fibers, and other elements involved in the behavior of the whole organism. It is further of some interest to pursue this study at least from the academic standpoint for there are some tempting analogues in gross behavior. It is still impossible, however, and fortunately not entirely necessary, to give a comprehensive statement of the basic mechanism of learning. Lashley has nicely summarized the most plausible theories of the mechanism of learning and a brief statement of them, based upon Lashley, is given herewith.[20]

a. The theory that articulatory connections grow between neurones: This theory has several forms, one of which is that the nerve end processes are like the one-celled amœba and are able to advance and retreat when physiological associations are set up or broken.

b. The theory that the size of the conducting medium is augmented by use: The growth of used muscles and the atrophy of parts of the body from disuse serve as tempting analogies to the substantiation of this theory.

c. The theory that learning depends on chemical alterations in the territory intermediate between the conducting cells: The names of Cason and Johnson are associated with this theory.[21] In its most common form, as stated by Sherrington, synaptic resistance in augmented and diminished quantities which may finally result in the actual

[20] K. S. Lashley, "Nervous Mechanism in Learning," in *Foundations of Experimental Psychology,* Carl Murchison, editor (Clark University Press, 1929), pp. 524–563.

[21] H. Cason, "The Physical Basis of the Conditioned Response," *American Journal of Psychology,* XXXVI (1925), 371–393. Also H. M. Johnson, "A Simpler Principle of Explanation of Imaginative and Ideational Behavior and of Learning," *Journal of Comparative Psychology,* VII (1927), 187–235.

alteration of the permeability of the synaptic membrane accounts for learning. An elementary but clear discussion of this may be found in Gates.[22]

d. The theory that learning depends upon "residual excitation": This theory is based upon the notion that, as in the case of visual after-images, there is an excitatory lag which accounts for memory and other processes involved in learning.

e. The theory of integrative nervous action based on alterations in discharge phases rather than specific cell connections: This theory is anti-connectionistic and does not hold for much functional localization in the cerebrum. Studies of specific cerebral localization based upon cauterization, lesion, etc., are left partially unexplained by this theory, but some of the facts of nervous and mental reeducation involving the vicarious functioning of parts of the cerebrum stand in apparent confirmation. Lashley regards these theories, which have been given so briefly because the detail involved would result in a lengthy discussion were it all given, as of about equal value in practical situations.[23]

The net result of reading a treatise of so well known an experimentalist and so careful a collator as Lashley is a persistent suspicion that one is not much improved by it, so far as an adequate theory of the learning process goes which will actually enable one to predict results in learning situations.[24]

The important implication for education is that one is thrown back upon an empirical method. This necessitates

[22] *Op. cit.*, p. 50.
[23] *Op. cit.*, p. 559.
[24] *Ibid.*, p. 561.

actual observations of pupil conduct in thousands of varying situations. Data thus obtained and statistically systematized must be used as bases for the curriculum and methods until fundamental research furnishes more tangible clues. Lashley is certain that a start from false premises has been made and that the future will see in all likelihood an entirely different type of fundamental research. This research will certainly have valuable educational applications and implications. Results to date indicate that, with all their manifest mistakes, pedagogues are following the only possible method.

Learning as Organizing

The manifest inadequacies of the theories of the physiological basis of learning to contribute practical suggestions to school procedure do not leave the educational psychologist hopeless or imply that educational psychology as a study is futile. Although as much enamoured of physiological facts as any one, Watson has made a major contribution to education in demonstrating the possibilities of reliable observations of behavior. The point involved has been discussed in Chapter I. It may be summarized by saying that some sort of prediction of human conduct is of necessity forced upon every one. It is not a question of whether or not one hundred per cent accurate prediction is possible. Therefore, on the basis of some of these empirical observations, it is worth while to examine the nature of learning and one of the features which becomes apparent is that learning involves a large element of organization. This has been emphasized by Mursell who holds that organization and purpose are the two central features of all learning processes. Organization, in turn, involves the factors of differentiation, assimilation,

gradation, and re-definition.[25] Judd, in his discussion of generalized experience, also centers upon the factor of organization in mental processes.[26] He was one of the first to state the educational significance of *Gestalt* psychology.[27] The stress upon organization as a fundamental characteristic of all mental effort in learning implies that qualitative changes occur in the process of organization and generalization. It might be said that "quality" is an emergent of organization.[28]

Mursell's treatment of purpose does not possess the clarity that his exposition of organization as a factor in learning has.[29] One is not certain from his development of the topic just what part consciousness is to play in purpose or whether all purpose is conscious. The point is emphasized that aimlessness is a predominant school evil and leads to poor learning because the learning does not serve correct utilitarian purposes. The case of foreign language is cited as an instance. The modernized two year course in modern language is contrasted with the older four year course. That differences exist can not be denied. There is some question, however, as to whether the learning as such is any better in the modernized two year course than that in the older four year course. It is, further, not quite clear as to the distinction obtaining between purpose and utility. Judged from the psychological

[25] James L. Mursell, *The Psychology of Secondary School Teaching* (W. W. Norton and Company, Inc., 1932), p. 37.

[26] Charles H. Judd, *Psychology of Secondary Education* (Ginn and Company, 1927), "Mental Processes as Products of Organization," p. 439.

[27] See also Robert Morris Ogden, *Psychology and Education* (Harcourt, Brace and Company, 1926), Chapters XIV–XV.

[28] C. Lloyd Morgan, *Emergent Evolution* (Williams and Norgate, 1923).

[29] *Op. cit.*, p. 40.

standpoint only, namely, in terms of the effectiveness of the acquisition and the extent of the retention, learning need not always be socially or individually utilitarian. Also, the distinction is not evident between purpose in the mind of the learner and purpose in the mind of the teacher. That education must have definitely stated objectives certainly is true. That goals should be set up which have social significance and individual value is obvious, but this might all be granted and the purposive nature of the individual's own learning still not be established. As a matter of fact, unless the word *purpose* be defined in very general terms indeed, many of the world's discoveries and inventions have been "purposeless." The danger of over-early objectified teaching is the fixation of habit to which Mursell so strenuously objects.[30]

The idea of learning through organization carries some pertinent implications for educational methods. It lends background for some attention to "general methods." Judd states that the process of abstraction is not the collecting of a colossal number of items of behavior but that abstracting is really a method of thinking. These general methods of thinking are important in all subjects and will be discussed in Chapter XI as will also the theory of the transfer of training which is closely allied to the problem of organization as a function of learning.

Classroom method, if organization be as important in the learning process as seems to be the case, should consider the following:

1. *Emphasis upon the general phases of the subject taught.* This is particularly true in the methods of organizing and handling subject matter which is to be imparted to

[30] *Ibid.*, p. 42.

the pupil. There is some question as to the extent to which these may be carried over from one subject to another. Regardless of the extent to which transfer of method of attack is universal, it is almost certain that the original work of James on the transfer of training, whatever may have been James's own ideas on the matter, has since been greatly over-emphasized. Original experimentation as employed by James, while admirable in objectives and faithful in execution, illustrated about every possible error which modern controlled experimentation would seek to avoid. It is now entirely respectable to insist upon some concentration upon the general features of each subject. The advantages are many. One of the most manifest of these advantages is an articulation and point of unity between different subjects which otherwise could not exist. Another consideration is that the organizational features of the subject may persist long after the specific items of information have been lost.

2. Actual practice in organizational activity. Those who are concerned with college teaching are usually familiar with the consternation which is evident when a class is given an assignment which requires some organizational ability in addition to the performance of certain set tasks. The questions which are asked, the floundering which takes place and the poor or haphazard results which almost inevitably occur are patent evidence of the fact that training in the lower levels of education has been fairly monotyped. Even yet a preponderance of the work which children do in the high school and junior high school consists of the memorization of highly specific and routinized assignments. The project method was a gallant effort to de-formalize the learning process. But it, too, has been sadly misused, and projects to-day in many schools are as stereotyped with mimeo-

graphed instructions as any other type of lesson. Whether or not the random and diffuse activity which it must be admitted is likely to result from the use of a free method in allowing pupils to gain practice in the organization of content is so great as to invalidate the procedure is still a matter of question. In spite of a certain amount of waste motion it would probably be well worth while to attempt more of this type of teaching. If this were done, children might reach the higher levels of education enabled to take a problem and formulate a method of attack and procedure of their own accord without the completely subservient following of some prepared outline of predigested material. Certain it is that the organizational phases of learning have not received nearly the amount of attention that the memory phases have, and it is for this reason, perhaps, that one hears the almost universal cry on the part of critics of the schools that they are turning out products that are unable to think independently.

The Conditioned Reflex and Associative Shifting

Partly because of the intrinsic interest in the problems which were being investigated and partly because of the excellently controlled technique and care with which variables were held under subjugation, the work of Pavlov on the conditioning (conditioned reflex) was of interest to American psychologists.[31] This monumental physiological work, starting out in one direction and branching into another with profound results, bid fair to solve the whole problem of learning in a neat and compact fashion. Certain American psychologists objected rather strenuously to some

[31] I. P. Pavlov, *Conditioned Reflexes* (Oxford University Press, 1927).

of Pavlov's philosophizing or generalizing upon the basis of his more specific results, but, on the whole, the findings were accepted *in toto* and used far and wide as an explanatory principle of the mechanism of learning. It has been assumed by many in a rather vague way that there is some connection between the discussion of associative shifting as given by Thorndike in his own classic treatise and the conditioned reflex, but the exact nature and extent of this relationship has never been made entirely clear, particularly with an experimental basis. It happens that Thorndike has interested himself in the problem and put forth a discussion which attempts to settle the issue.[32] In general, his conclusions may be summarized as follows:

1. The conditioned reflex, while adequately demonstrated experimentally, is a special, if not an unnatural form of learning in which the variables are controlled to a far greater extent than in everyday life, and, consequently, the learning is modified accordingly, being of a special variety.

2. The phenomenon of the conditioned reflex is not the general pattern for learning but exhibits certain peculiar features of its own which are not generally characteristic of learning. For example, in associative shifting of the usual sort reward of a satisfying sort plays a considerable part. This is not true in the formation of the conditioned reflex.

3. In associative shift the change is likely to take place somewhat gradually. In fact, it must be gradual in some cases. This is not true in the case of the conditioned reflex where the change is of the all-or-none variety and occurs comparatively rapidly.

[32] E. L. Thorndike, *Fundamentals of Learning* (Teachers College, Columbia University, 1932), p. 402.

4. Ordinary associative connections diminish in strength (forgetting) with the passage of time. The reverse is the case of the conditioned reflex, since the phenomenon of temporary extinction passes away with time and conditioning again begins to function.

5. The chronological position of the conditioned stimulus is of more importance in the case of the conditioned reflex than in the case of the ordinary associative shift.

Strangely enough, some of Thorndike's criticisms of the explanatory shortcomings of the conditioned reflex findings resemble the objections of various *Gestalt* writers to his own principle of connectionism.[33] In both cases the objection seems to be to an overly analytical point of view which dissects out of the sum total of human conduct certain theoretical units and overemphasizes these. Probably both criticisms are partially unjust. Thorndike certainly gives clear enough evidence of appreciating the value not only of the situation as a whole but also of the emergent elements therein in his original work on educational psychology.[34]

One of the outstanding differences between the point of view which Thorndike has set forth and other treatments of the same topic is the innate satisfyingness or annoyingness of given responses. Thorndike makes no effort to delve deeply into the exact nature of satisfyingness on the physiological side. Satisfyingness seems to be defined rather in terms of the animal's conduct and that is satisfying which the animal seeks to prolong and continue. The reverse is true of annoyance. In the case of the conditioned reflex it is a little difficult to see how the reflex when it once occurs is

[33] Kurt Koffka, *The Growth of the Mind* (K. Paul, Trench, Trubner and Company, 1924).

[34] *Op. cit.*, pp. 13 and 420.

such a satisfying state of affairs particularly when the external conditions are so rigorously controlled. The two points of view might be reconciled by saying that the meat, in the case of the dog which is salivating and at the same time hearing the sound of the bell, constitutes a satisfying state of affairs.

It makes a difference in school teaching whether or not one takes the conditioned response formula or the associative shifting formula with its concomitant principles of satisfyingness and annoyingness as the basis of procedure. The conditioned reflex formula would not preclude the possibility of adequate motivating work, although the technique of motivation would be different. According to Thorndike's explanation, the response or conduct itself is intrinsically motivating because of its inherent annoying or satisfying nature. With the conditioned reflex formula as a guide one would be more apt to employ superimposed motivation.

Regardless of which explanation is employed the following points should borne in mind:

1. School teaching involves whole situations, not isolated conduct units. The school conditions resemble the laboratory of Pavlov in that a certain number of the variables are under control.

2. When a natural response-getting (unconditioned) stimulus is present, conditioning takes place automatically. In other words, it does not take any pedagogical hocus-pocus to make the actual associative shift itself. Pedagogical skill comes in getting the stage properly set. There is no question but that the reason why so much teaching fails to register is that there is no natural response-getting stimulus in the teaching situation. As a matter of fact,

the prime objective is to secure the exciting situation. The response to the bell, which may be viewed as the curriculum, teaches itself when the other condition is present.

3. Teaching as controlled shifting of associations must strive to maintain a continuous balance between the unconditioned and conditioned responses in quantity. For example, illustrations may be used which are approximately natural in their response-getting ability. But it is possible to over-illustrate a point to the exclusion of memory of the point. As a matter of fact, students often report that this is the case and can remember a series of more natural response-getting elements in a lecture and forget the thread of content which was supposedly being mastered.

General Types of Learning

The problem arises of the kinds of learning which exist and whether all learning may be subsumed under one general explanatory principle. Although the matrix of learning may be said to be the same in all of its phases, divisions were made for the sake of convenience in Chapter III. Trow distinguishes the following categories:

(1) sensori-motor
(2) associative
(3) rational
(4) social [35]

These are closely related to the types of mental functions which were discussed in Chapter III under the following headings:

[35] William Clark Trow, *Educational Psychology* (Houghton Mifflin Company, 1931), Chapters VII–X.

(1) Problem-solving
(2) Acquisition of knowledge
(3) Acquisition of skills
(4) Social competence
(5) Creative activity
(6) Æsthetic attitudes

Chapter III gives the genetic point of view of the emergence of these mental functions as the result of the process of progressive and integrated learning. At this point it is sufficient to indicate two principal corollaries to the main thesis of the discussion in that chapter. These are as follows:

1. In the final analysis, the *rapport* which one maintains with the external world and, by inference, one's knowledge of this world, depend upon the sense organs. They are the *sine qua non* of progressive adaptation to a changing environment. The importance of the correct education of the senses or, more properly, sufficient early sensory training has long been recognized by systematic students of pedagogy. This was one of the first principles stressed by pioneer writers on education.[36] In fact, pioneer discussions of pedagogical principles have been very little improved upon in the treatment of the methods and emphasis to be laid upon sensory education. Few modern educators would care to alter materially Comenius' contention that the content of the intellect is a function of the sense organs.[37]

One caution should be given in connection with sensory education and its importance in child life. This may be stated as a concentration upon *systematic* sensory experience. It is true that in its earliest months and years the child does much random experimenting, thus laying an

[36] J. A. Comenius, *The Great Didactic,* Keatinge's Edition (A. and C. Black, 1896).

[37] Frederick Elmer Bolton, *Principles of Education* (Charles Scribner's Sons, 1910), Chapter XVII, "Sensory Education."

apperceptive sensory background which is valuable in later years. The child learns inductively and in an elementary form principles which many years later he will have no small difficulty in recognizing when stated in polysyllabic scientific terminology. He learns, for example, a certain amount about the laws of falling bodies when he lets the toy drop and it falls on his foot; he learns about the laws of thermo-dynamics when he comes in proximity to a hot stove; he learns about the laws of conditioning when he comes to associate chance articles in the environment with pleasant or unpleasant effects of the same. But it is possible so to control the environment that a wide variety of sense experiences results without interfering with the untrammelled self-education of the child. For instance, it is likely that at this age what is later erroneously termed sensory prepotentiality develops. Thus a child, perhaps by accident in the first instance and by habit in the following situations, may tend to favor one sense organ over another and thus acquire greater facility in the use of this favored medium and a larger fund of information based upon it. Some of the things learned affect social competence. For example, a boy with a deaf grandmother may become used to the sensory experience of loud talking and be in the habit of talking loudly himself. This is an effective adjustment to the particular exigencies of the situation at hand, but in the future it may involve embarrassing circumstances. Instances of this sort may be multiplied.

2. The second correlative factor linking the general principles of learning to the genetic phases of mental functions is the principle of association. This principle is neither new nor obscure. Like sensory education, it should

be emphasized in considering the genetic aspects of learning. Robinson, in discussing the present status of the theory of association, maintains that, except for Titchener and McDougall who make comparatively little use of this principle, American psychologists in the last half century have magnified the theory of association as an explanatory principle in learning.[38] Robinson mentions in particular the writings of Angell, Thorndike, Woodworth, Watson, Carr, Kantor, and Hollingworth. The association theory is valuable because it explains satisfactorily so many observed facts. But it is not an exact scientific principle because it is not based upon physiological experimentation. It is an empirical explanation. It is not all-inclusive and some facts stand in apparent contradistinction to it. Robinson mentions the work of Dunlap, Thorndike, and Köhler, who show that high frequency functions do not always result in the greatest amount of associative fixation.[39] The continuous effort of writers on association has been to find some general explanatory principle. Complete success has not attended the search, but contiguity in time or place and similarity in character are the two principles of association which have been most favored.[40]

Levels of Learning and Conduct

In some ways it is unfortunate that learning does not consist of the accretion of information in standardized units such as the piling of children's blocks. This is most certainly not the case. What is the case is not so easy to discover with

[38] Edward S. Robinson, *Association Theory To-day* (The Century Co., 1932), p. 3.
[39] *Ibid.*, p. 129.
[40] *Ibid.*, p. 128.

certainty. Learning differs in quantity and quality, and levels of ability or intelligence involve not only the capacity to do increased amounts of the same work but also the capacity to do different kinds of things. It is easy to demonstrate that the superior person can do many more things on a given capacity level than the person who is working at maximum potential at that level. In other words, when a person is working at a quality level below the maximum of which he is capable, the chances are that on the average he will exceed the performance of the person who is at the limit of his qualitative capacity at that level. The differences between qualitative levels and the points of demarcation are far less easy to determine, especially if one assumes the existence of different kinds of intelligence such as mechanical, social and abstract, for the levels then become inextricably mixed unless the assumption is made that there is a perfect correlation between various kinds of intelligence.

The qualitative or capacity level may be regarded as innately determined. Except in certain pathological cases, usually involving pseudo-subcapacity, vertical growth, that is, growth which results in progress from one intelligence level to another, is unlikely. Horizontal growth is theoretically without limits but actually circumscribed by the limitations of time, fatigue, etc.[41] In explaining the concept of vertical and horizontal growth, Sandiford indicates that more horizontal growth is possible at higher vertical levels. Thus, the congenital idiot is circumscribed not only in the vertical level of his ability or intelligence but also in his lateral development upon the idiot level.[42] Sandiford further points out that

[41] Peter Sandiford, *Educational Psychology* (Longmans, Green & Co., 1930), p. 151.
[42] *Ibid.*, p. 150.

future research should be partially devoted to determining the minimum ability necessary for performing tasks at the various levels. At present, there is little at hand of a scientific sort on this problem. Common observation seems to indicate that two sorts of difficulty occur. The first is the difficulty of the person of outstanding ability forced to work at tasks on an ability level much below his capacity, a condition which results in dissatisfaction and inefficiency. For example, Einstein might make a good elevator boy. The chances are that he would not, for the type of speculation of which he is capable and to which he is accustomed does not result in close attention to the trivial but necessary details of elevator operation. This does not imply intellectual inability to perform lower level operations, but it does hint that, when the whole man is considered, trouble is apt to result. Conversely, the person of low level capacity is in subjective and objective turmoil when forced to function at higher levels. Politically and ethically, it is probably entirely sound to contend that every one is entitled to a post-graduate university education. In actual practice it would result in much grief for the learner and for the teacher. Nor can these difficulties be explained collectively by maintaining that the trouble is entirely faulty early training.

It is possible to make an apparent compensation for vertical levels by wide expansion on the horizontal. That is, the person who is of only average intellectual ability may seem to be somewhat more superior than is actually the case because of his industrious application and acquisition of many facts. This is probably frequently the case. There is little reason to suppose that the correlation between vertical level and motivation is perfect. There is scarcely more basis to suspect that superior groups are always working at tasks which

require the limit of their capacity. In actual practice the over-lapping is pronounced. One can not be sure that the world's famous discoveries have always been made by intellectual geniuses, although the discoverers are invariably termed geniuses after the discovery. Such achievements have not always been encompassed by a profound process of intellectualization and logical insight. They have sometimes resulted from a vast amount of tinkering around on a trial and error basis by people who have stressed the fact that the essence of the discovery was not profound thinking but assiduous experimentation.

There is the further perplexing problem of the shift of functions from higher to lower and lower to higher levels. It has been somewhat commonly taught that acts which originally require conscious attention at higher levels become governed when habitualized by the action of lower nervous centers. An example of this is learning to ride a bicycle which at first requires conscious attention to details and deliberated corrections of technique, but which eventually becomes habitual, allowing the attention on the higher levels to be directed elsewhere.[43] Conversely, a series of "low level" experiences may become articulated, integrated, and assimilated and pass into a higher abstractive phase. Inductive learning is an example of this. A number of sensory experiences of such a common article as a chair eventually lead, so the theory goes, to a generalized notion of a chair and the attaching of a symbol or word to this concept. The idea of *chairness* is the function and the product of the lower level experiences, but it partakes theoretically also of other attributes of its own.

It is clear that the whole problem of levels of intelligence

[43] John Frederick Dashiell, *Fundamentals of Objective Psychology* (Houghton Mifflin Company, 1928), p. 351.

in learning awaits further significant experimentation. There have been a few pertinent and significant experiments bearing upon the problem of which those by Dashiell are among the best,[44] and this early work has practical implications for teaching. Dashiell showed, for example, that over-learning of a function does not seem to fix the method employed in the learning. A group which had practiced continuously on one form of a substitution test scored progressively higher on the average on interval tests of this same content than a group which had practiced the method of substitution but on changing exercises including the original. But a final test consisting of content new to both groups was handled far more effectively by the group which had practiced upon changing practice exercises. This seems to mean that method must be practiced as such, and that it is not a function of mere practice.

Principles of Learning

1. The derivation of principles of learning. It would be an interesting exercise and perhaps a profitable one to send out a class in beginning educational psychology to formulate principles of learning based upon their own careful observation recorded for a week, with the specific stipulation that no one consult any documentary source. Undoubtedly some fairly reputable explanatory principles would result. These would be based upon observation, and it was upon observation that Aristotle formulated his statement of the laws of association which have by no means been entirely discarded to-day. Further than that, it might be correct to

[44] John Frederick Dashiell, "An Experiment in Isolation of Higher Level Habits," *Journal of Experimental Psychology,* VII (1924), p. 391.

say that the most recent tendency is a swing back toward the observation of actual human conduct as the basis for stating laws of that conduct.

In addition to systematic observation of behavior there is the method of controlled experimentation. Much of this experimental work has been done upon animals for the obvious reasons that the organism is more simple, the control more ready, and the availability more certain. Furthermore, it has been found that at least some of the results obtained are directly applicable to human behavior. Most psychologists are willing to grant an analogy between human behavior and animal behavior in the performance of certain functions. The inadequacy of animal experimentation comes, not in its total inapplicability, but in its lack of efficacy to explain the most lofty of human mental processes. It is beyond the scope of this treatise to summarize in detail the animal experiments upon which these principles have been based, but such a discussion is given by Sandiford.[45]

2. General explanatory theories of learning. Earlier in this chapter a summary was given of alternative neurological explanations of the mechanism of learning. There are, in addition, certain theories about the nature of learning as a whole. Some of the principal of these are as follows:

a. Learning as maturation: There is no question but that the maturing and growth of certain parts of the body have an effect upon learning ability.[46] In this sense the relation between maturation and learning is easily understandable. As maturation is extended to mean the maturing of specifically organized reaction systems directed

[45] *Op. cit.*, p. 183.

[46] John Mason Tyler, *Growth and Education* (Houghton Mifflin Company, 1907).

toward specific purposes, it becomes less comprehensible.[47]

b. Learning as trial and error: Many of the experiments on both animals and people show that numerous initial errors occur which generally decrease in number as practice progresses. Even human beings in confronting entirely novel situations are not always in the habit of sitting down and cogitating the possible solutions. Psychologists differ in the importance which they ascribe to the trial and error factor and to the part which it plays in the determination of the final product of learning. They differ likewise about the extent to which trial and error may be discarded or replaced as a method. The admonition, "Think before you act," implies that it is possible to avoid errors by projecting action mentally and discarding difficulties before they actually occur. Man is supposed to have greater ability in such prevision than the lower orders.

c. Learning as intuitive discernment: Reference has already been made to insight as an explanatory principle in learning. This may be viewed as a learned method of reacting or as a natural method. Some sections of lay opinion, for instance, hold that women possess a sixth sense which enables them to learn about certain social situations easily where a man would experience trouble and go through many trial and error steps. Many of the intuitive explanations of learning possess a romantic interest, but close attention to the problem of insight indicates that previous experience and regard for detail account for most of this efficacy.

d. Learning as configurational emergence: *Gestalt* psy-

[47] Floyd H. Allport, *Social Psychology* (Houghton Mifflin Company, 1924).

chologists have consistently objected to learning as a stamping in of correct responses and a stamping out of incorrect. They tend to view the learner as always confronted by a novel situation which is significant in its entirety. Parts of this situation may "emerge" or stand out. Learning is an emergent based upon adjustment to a series of progressively related configurations.[48]

e. Learning as associative connectionism: Events in the external environment which are contiguous in time or space or which bear similarity to each other tend to become related and to call up each other. This relationship requires some connection to bring it about, and many theories have been advanced as to the nature of this articulatory process. Thorndike has recently elaborated and expanded his theory of connectionism.[49]

f. Learning as purposive goal-seeking: This view of learning holds that man is primarily purposive in his endeavors and that learning consists of improved methods of approach to a desired end.

It is not meant to imply that the above categories of learning theory are mutually exclusive. They are given merely to indicate the emphases and explanations.

3. Principles of learning. In addition to the general theories of the nature of the learning process as a whole, there are certain principles of the function which are commonly recognized although not entirely agreed upon. These are as follows:

a. The principle of readiness:[50] Briefly stated, the prin-

[48] Raymond H. Wheeler and Francis T. Perkins, *Principles of Mental Development* (Thomas Y. Crowell Company, 1932).

[49] Edward L. Thorndike, *The Fundamentals of Learning* (Teachers College, Columbia University, 1932).

[50] Edward L. Thorndike, *Educational Psychology,* Volume II, *The*

ciple of readiness is that "ready" conduct is satisfying and "unready" conduct annoying. Mead has stated a related principle as the law of apperception.[51]

b. The principle of exercise: The principle of exercise holds that repetition governs learning. It has been pointed out, however, by a number of writers that this learning is not always directly proportionate to the amount of practice.[52]

c. The principle of effect: This principle states that "satisfying" connections between stimuli and responses become stronger and "annoying" connections become weaker.[53] Thorndike recognizes and attempts to explain the objections of psychologists who doubt the retroactive working of the satisfying effects of a connection upon the connection itself.[54]

d. The principle of recency: This states that last connections tend to persist. In general it seems correct, but Mursell has introduced evidence to indicate certain possible exceptions.[55] The types of learning in which immediate recall is less effective than later recall are those in which a period of time has never been necessary for the crystallization of the meaning and comprehensibility of the material. But this is just another way of saying what is true of all these laws of learning; namely, that

Psychology of Learning (Teachers College, Columbia University, 1921), Introduction, p. 1.

[51] Arthur Raymond Mead, *Supervised Student-Teaching* (Johnson Publishing Company, 1930), p. 105.

[52] Hulsey Cason, "Criticisms of the Laws of Exercise and Effect," *Psychological Review,* XXXI (1924), 397–417.

[53] Thorndike, *Educational Psychology,* Volume II, Introduction, p. 1.

[54] Edward L. Thorndike, *The Fundamentals of Learning* (Teachers College, Columbia University, 1932), p. 78.

[55] *Op. cit.,* p. 65.

the assumption is made that all the other variables in the situation are remaining constant. Thus, if the variability and comprehensibility and interest of material are done away with, the law of recency is operating. In practical situations, one must recognize that the variables are operating and in very great number and subject to only partial control in the ordinary schoolroom.

e. The principle of primacy: This principle is that first impressions tend to be more lasting than those intermediate between first and last. The same comment holds for the law of primacy as for the law of recency.

f. The principle of vividness (intensity): Thorndike recognizes this principle in stating his law of use and disuse.[56] It states that the vigor involved in the formation of the connection modifies its durability.

In this list of principles of learning, it is likely that the principle of readiness would be most easily accepted as practical by teachers. There seems to be little question but that the learner should be ready to respond before attempting to learn. On the principle of exercise as implying drill, there is less agreement especially when the assumption is made that progress will be directly proportional to the amount of drill. The law of effect is also fairly widely accepted, the main criticisms of it being of the mechanisms involved in the backward action of the satisfying result of the connection. Few question the fact that learning should be satisfying to the learner if possible. The law of primacy is most frequently invoked in school practice by trying to have first impressions correct. Most people can recall some mistake they make which is the result of doing the thing incorrectly the first time. The principle of recency is psychological justi-

[56] *Educational Psychology,* Volume II, Introduction, p. 2, foot-note.

fication for the review procedure. It is illustrated in cramming by college students. The principle of vividness is seen in the differences which exist between public speakers.

4. Habit. Habit is both a blessing and a curse to the learner. It is a boon in that it enables one to save time and energy by the automatic functioning of learned activities. It is a curse because it leads into what is commonly known as a "rut" and stultifies progress. One hears much in education these days about habit formation and its importance. "Health habits" are an example. In general, it may be said that those habits which are directed toward the maintenance of personal efficiency are good. Habits are most beneficial in situations where unvarying action is required. If eating habits changed every day there would be no point in forming a habit of eating. Therefore, in school the effort should be to make habitual only those functions which are likely to remain fairly constant over a comparatively long period of time. Plasticity of conduct and even costly variability should obtain where the situation is apt to change rapidly.

5. Learning "units." There has been much said recently about unit teaching and learning. Teaching by units stands in supposed contrast to the method of formal organization. The chronological method in history, for example, would be a case of formal procedure. The unit might be defined as a body of logically related subject matter. The importance of "belonging together" of content has not been sufficiently investigated, although Thorndike has recently gone a long way experimentally in making clear its significance in efficient learning.[57] Grinstead has recently summarized the psychological principles upon which unit learning and teaching

[57] *The Fundamentals of Learning,* Chapter IV, "The Influence of the Repetition of a Connection with Belonging."

depend. A quotation of the summary of this discussion follows: [58]

"The unit of learning and of teaching, then, rests upon the following principles: (1) Human behavior tends to be dominated by an internal purpose. (2) Human experience tends to result in learning products, or acquired ways of meeting situations, which are the objectives of education. (3) The conditions of effective learning are largely reducible to the reality and significance of the learning experience. (4) All learning is individual, although socially conditioned and resulting in the mastery of social as well as physical situations. (5) Attempts to direct learning must constantly reckon with the variability of the individual learners. (6) Social progress depends on the enterprises of individual learners. (7) An enterprise is a significant and spontaneous undertaking with a dominating purpose or goal. (8) An enterprise tends to economy of effort. (9) Most learning comes through the enterprise, which, if directed toward the mastery of a type of situation rather than of a particular situation, is a unit of learning. (10) The elements in a mastery are: (a) The necessary component ideas, skills, and items of knowledge; (b) The coördination of these elements into an integrated complex of response adequate to the type of situation to be mastered; (c) The knack of recognizing the type of situation and evoking the appropriate complex; and (d) An active attitude of willingness to meet the situation. (11) The mastery of a type of situation is the central objective of a learning unit; the component elements are contributory objectives; incidental learning products are usually available from a unit, and may be consciously sought as objectives, but not as essentials. (12) The activities of a unit should be carried on at least until the threshold of mastery is reached; and the mastery must be amplified in later and more varied experience in order to permanence and wide applicability. (13) A unit of learning in which the learner accepts the help of a teacher is a teaching unit. (14) The value of the teacher element in a teaching unit lies in his curricular knowledge, his understanding and sympathetic attitude toward the learners, and his merited authority. (15) The activities of the teacher in unit teaching are: (a) preparation, in

[58] Wren Jones Grinstead, "The Unit of Learning: Its Meaning and Principles," *Educational Outlook,* Vol. VII, No. 1, pp. 19–20.

the selection and formulation of the unit, the determination of objectives, and the planning of learning and teaching experiences; and (b) direction, in the motivation and economical guidance of learning activities, the measurement of outcomes, and their integration into complete and amplified mastery. (16) The chief pitfalls in unit teaching are: (a) the substitution of logically organized blocks of subject-matter for real enterprises; (b) the neglect of motivation; (c) the neglect to criticize prescribed or traditional activities as to their contribution to the objectives of the unit; (d) the neglect to keep the purpose of each activity clear to the learners; (e) losing sight of individual natures and needs; and (f) failing to respect the initiative of the individual learners."

6. Factors in efficient learning.

a. Favorable conditions: Higginson mentions external conditions, physiological conditions, psychological conditions, and educational conditions, all of which should be made as favorable as possible before the learning situation is allowed to progress.[59] Book mentions (1) an active learner, (2) an appropriate stimulus (unconditioned stimulus), (3) an inappropriate stimulus (conditioned stimulus), and (4) repetition to establish linkage.[60]

b. Analyzed objectives: Practically all writers emphasize the importance of motives in learning.

c. Progressively improved technique of learning.

d. Graduated amount of significant practice: The first correct performance of a function is termed the threshold. Over-threshold practice is necessary for the habitualization of the function. This practice should be significant in the sense of Thorndike's "belonging." Mursell has criticized teachers' recommendation to pupils of over-

[59] Glenn D. Higginson, *Fields of Psychology* (Henry Holt and Company, 1931), pp. 360–361.

[60] William F. Book, *Economy and Technique of Learning* (D. C. Heath & Co., 1932), p. 140.

learning as an "assured procedure" for guaranteeing later recall. His criticism is based upon the fact that no exact relationship has been demonstrated between the amount of over-learning and the amount of super-threshold repetition. While the criticism is partially justified and based upon experimental evidence, it probably does not constitute the rule. Mursell contents himself with cautioning the teacher against recommending over-practice. In his discussion he tends to interchange the meaning of super-threshold repetition and over-learning. Admitting that over-threshold practice is not invariably a guarantee of retention, it is nevertheless true that in the majority of cases some advice must be given to the person who desires to fix the function. This is particularly true when attention, motivation, etc., have been well taken care of previously. The learner could not very well be admonished to stop practicing with the threshold performance. Sandiford's discussion in which he emphasizes that over-learning depends upon super-threshold repetition and slows forgetting is more representative of the usual situation.[61] Threshold learning is seldom, if ever, mastery. The term over-learning is usually a misnomer. What is referred to is actually more complete learning—more nearly perfect automatization. Few performances are so satisfactory that the expert teacher can make no suggestions for improvement. The ordinary teacher may merely ask the pupil who has reached the threshold to continue practice or study; the expert teacher will suggest new or additional ways to practice or study and thus set the threshold ahead where it belongs; *i. e.,* at mastery. The inspiring teacher advances thresholds and turns staleness into zest.

[61] *Op. cit.,* p. 250.

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CHAPTER XI

THE PSYCHOLOGY OF LEARNING IN THE SCHOOL SUBJECTS

Characteristics Which are Common to All Subjects

All school subjects have many common characteristics. Consequently, what is learned in one subject can be applied in others. The importance of recognizing this point in teaching and learning would be too obvious to warrant a discussion of it, were it not for the excessive tendency to compartmentalize learning and thus to set up barriers which impede the generalization of knowledge. The purpose of this section is to suggest parallel relationships in subject matter and learning which facilitate both teaching and learning.

1. *Improved adjustment of the learner.* All subjects consist of departmentalized materials for the improved adjustment of the learner. Much can be learned, however, in any subject without producing a corresponding improvement in the learner's adjustment. The pupil who learns in civics to repeat desirable rules of conduct which he fails to follow is an instance. The impracticality of his learning may be due either to his lack of understanding of the rules and their application or to a value which other principles of action seem to have. The desirable rules are disregarded, or, at best, they are considered and found wanting when occasions arise for following them. They are said to be only theoreti-

cal. The same is true of the pupil in science— "Pupils can state a principle when it is called for but can not answer questions based on the application of the principle or give their own interpretation of the meaning of the principle." [1] In such cases, science, too, is only theoretical, the reason being, apparently, that the principle is not understood unless, in addition to reading it, the pupil makes various applications of it.[2] Mathematics presents similar difficulties. "Millions for factoring, but not one cent for compound interest." Such is Hedrick's comment upon formalism, when teachers carry factoring to absurd lengths without knowing and without their pupils' knowing the relationship of the process to geometric progression and, therefore, to compound interest.[3] This recital of difficulties could be extended readily to all subjects, and the situations would be fundamentally the same: pupils would be found learning rules and acquiring formal skills without gaining a correspondingly improved adjustment. All these anomalous results would be due, as stated above, either to a lack of understanding of the rules and their application or to the apparent impracticality of the rules in life situations. The remedy lies, in all cases, with the teacher and the pupil: no teacher should present rules which he does not understand or apply to pupils who do not and can not apply them.

In all subjects, then, there are general principles which must be applied to a variety of specific conditions, if they

[1] W. L. Beauchamp, "A Preliminary Experimental Study of Technique in the Mastery of Subject-Matter in Elementary Physical Science" (*Supplementary Educational Monographs,* No. 24, January, 1923, Studies in Secondary Education, I, by H. C. Morrison, *et al.,* The University of Chicago), p. 48.

[2] *Ibid.,* p. 87.

[3] E. R. Hedrick, "What Mathematics Means to the World," *Mathematics Teacher,* Vol. XXV, No. 5, May, 1932, pp. 249–263.

are to become general to the pupil. This specific applying of a principle, which the preceding paragraph suggests to be needed in all subjects, can be initiated by either the teacher or the pupil. The teacher may make such applications either to increase the understanding of the principle itself, or to facilitate the practical application to the vital situations in which the pupil is directed to use his general principle. If practice only is provided, the application may be made to any situation that is available. If the specific use of the principle is to be made in vital situations, the situations must be selected for their own worth as well as for their availability. Second, the pupil may see relationships between the situation in which the principle has been learned and other situations of his own choosing. In such a case, the teacher is responsible only for teaching the principle in one situation, while the pupil gains mastery in applying it in many others in his own way. Whenever pupils have sufficient ability and inclination to see relationships and to act upon them, the teacher need make no effort to apply principles.

Several difficulties arise in each of these two cases. When applications are planned only to impress a principle, the applications are likely to be formal and pupils' work is likely to be perfunctory. Examples of this are numerous in mathematics, where most problems are only exercises and do not, in themselves, present situations which are vital to any one. No one in an algebra class is concerned with the activities of A, B, and C, who are alleged to do a task in a certain time, or in boats sailing upstream or downstream, with or against the current. In fact, mathematics, if useful only in the solution of such problems as abound in textbooks, could be dispensed with as if it were a pedantic disease. The same is true of the application of principles of English composi-

tion to the proverbial topics, which optimists assert are no longer in use. Such applications may have value, but, if pupils are to see the general value of the principles they meet, they must have also the other kind of situations to which the principles can be applied—*i. e.* situations which are intrinsically significant to the pupils. The ablest pupils occasionally find such situations; dull pupils seldom do. It is essential, therefore, that teachers adopt the rule stated in Chapter IX and attempt to teach only those principles for which they can find significant applications—applications which are significant for most pupils. If this leads to the elimination of certain principles, so much the better for the subject as well as for the pupil.

What, then, are the possibilities for understanding and applying the principles of school subjects? Two possibilities have been named: one in which the teacher finds situations vital to pupils, and the other in which the pupils find such situations for themselves. The recognition of these possibilities and their limitations is essential in all subjects.

Nearly all school subjects employ all the six mental functions. History, for example, raises problems of social competence at every turn, it requires much acquisition of knowledge that is used with the skill designated as historical method, and, through its relation to the arts and literature, it provides æsthetic experiencing and opportunities for creative activity. This is illustrated by the program of topics followed by fifth-grade pupils of the Lincoln School in a unit on "Water Transportation":

How long we have had ships.
How boats and sails began.
Modern boats.
A full-rigged ship.

Poems and books about ships.
Ports of the world.
Lighthouses and their uses.
Trips we have made.
Joseph Conrad; a writer of sea stories.
What the sea makes one feel.
How we made our frieze and block prints.
Chanteys and how they are made.
Three chanteys. (*Sung by the whole class.*)
Dance. (*Sailors' hornpipe by the girls of the class.*) [4]

That subjects are not always pursued in such a comprehensive fashion is the fault not of the subjects but of teachers. Physics, which is loathed by thousands of girls, is a subject whose possibilities are grossly neglected by many teachers. Like all subjects, physics is a socio-individualistic subject—it deals with improved adjustment of society and individuals to the universe through the understanding of physical facts. This adjustment requires the study of problems which range from those of the piano mover with his use of the inclined plane to those of the artist with his use of perspective. The place of everyday problems of all sorts in such a study is clear to one who seeks an understanding of this subject. Educational prejudices are the chief obstacles to more thorough learning of its facts and principles.[5] This subject, like many others, has been desiccated by teachers who see in it only "pure" facts, and who are unable to explain or apply those facts in any significant way.

This criticism of physics teaching can be extended to every subject at every level. One of the most significant points about the criticism is that it is vigorously voiced by experts

[4] James S. Tippett, *et al., Curriculum Making in an Elementary School* (Ginn and Company, 1927), p. 184.

[5] C. R. Mann, *The Teaching of Physics* (The Macmillan Company, 1912), pp. 215–216.

in the respective departments. It is based upon the fundamental observation that school subjects have many important values which are missed by many pupils and that this neglect of values is the fault of teachers more often than of pupils. To get these values, pupils must be directed, but the blind can seldom lead the blind. Teachers can not learn for their pupils, but they can discover directions in which pupils should be encouraged to go. When this is done adequately, subjects will have universal appeal to pupils. This does not mean that all pupils could master all subjects, but only that all pupils can be lead to see conduct values for themselves in all subjects.

Many objections can be raised to the statement that all school subjects have a universal appeal. First, it may be asserted that many subjects are beyond the comprehension of certain pupils. This objection is superficial for two reasons: it is made with reference to the subjects as usually organized and taught, and it is based upon the common underestimation of pupils' capacities. Any one who can learn his own language probably can learn another language, as is shown by the bilingualism of every one who lives near the borderlines of certain countries. He can, therefore, learn a foreign language. Any one who can learn to count objects probably can learn to use symbols or counters for the objects, as in arithmetic or algebra. Any one who can learn that water ordinarily runs downhill can learn something of gravity. Therefore, when it is asserted that a pupil can not learn a subject, what is meant is that he can not learn all about the subject, or that he can not learn the subject under existing conditions.

Second, one may say that a subject lies outside the interests of certain pupils. This objection runs counter to the

investigations of pupil interests.[6] All subjects have potential appeals to all pupils. These appeals are not made unless the teacher directs the pupils. A geology student will serve as an example of this need of direction. Under compulsion, he registered for a college course in history. He told the instructor that he had no interest in history, but the teacher directed him to the relation between geology and history and gave him materials to study. His interest in history developed at once, and he announced later that he was planning to take more courses in history. The instructor then warned him that the geological aspects of history were not recognized by all history instructors as significant! Obviously, this case might have been reversed by a history student who wandered into geology. Good teachers locate pupils' interests and direct them. Once motivated, the pupil tends to attach to the entire subject the value that he has found in a part of it. This is merely an extension of the principle that all subjects converge, if pursued far enough: all interests converge also, if carried to their potential points.

Third, it is said that certain pupils ought not to attempt certain subjects. This is not a question of the possibility of learning, however, but a question of relative value. It has, therefore, direct bearing upon the universality of appeal of subjects. It is true that pupils often see that they are using their time unwisely in pursuing certain subjects either from choice or under compulsion. When subjects of relatively low value are taught by excellent teachers, this condition is likely to lead pupils to give too much attention to subjects which, though contributory to conduct, might properly be termed

[6] W. L. Uhl, *Secondary School Curricula* (The Macmillan Company, 1927), pp. 384–391.

hobbies for many pupils. Such a condition emphasizes the universality of appeal of subjects.

2. Sequential organization. All subjects provide progressive series of stimuli. The learning of a subject is, therefore, in certain respects, sequential and accumulative in topical organization. What is learned at one stage is needed at a later stage. Many ineffective attempts to learn more than the rudiments of a subject are due to the inadequate mastery of the rudiments themselves. The removal of this difficulty consists not only of finding it, but also of finding means for making the rudiments significant and gripping for the beginner. The order of topics can often be changed so that pupils are not plunged at the outset into a maze of definitions. This is done, for example, by Mann and Twiss in physics. Their book begins by introducing the pupils to a difficult topic through the simple, everyday problem of the piano mover who employs the inclined plane to reduce the amount of his work per unit of time.[7] Such an order of points within a topic increases a pupil's grasp of the meaning of the topic, and, when the illustration is a good one, it increases motivation. As the learning of every subject suffers from pupils' failure to master the rudiments and to accumulate usable knowledge and skill as the course proceeds, means should be found to make each point significant and applicable when it is presented. As suggested in Chapter I, this principle can be misapplied, as it seems to have been when Latin was begun by the study of a text from Cæsar. A successful application of the principle considers the requirements of both the subject and the learner,

[7] C. R. Mann and G. R. Twiss, *Physics* (Scott, Foresman and Company, 1910).

and an individual learner may profit most by an unconventional sequence.

Certain subjects are apparently more sequential and accumulative than others. A casual examination of any of the later theorems of geometry shows the learner's dependence upon the foregoing portions of this subject. This condition is less apparent in literature, in which each topic or masterpiece may supply, through its own context, a sufficient background for the necessary understanding and æsthetic experiencing of it. The order in which *Silas Marner, Treasure Island,* and *The Courtship of Miles Standish* are read has, for example, little bearing upon the effective study of these classics. In other classics, more interdependence is present, although comparatively few classics necessitate certain other classics as a background. If, however, Milton's *L'Allegro* were to be read, it might well be preceded by the reading of many of the ancient classics. In this case, the number of allusions to earlier literature can be likened to the references to earlier theorems in the later books of geometry. For the understanding and, therefore, for the fairly complete æsthetic experiencing of certain classics, the reading of other classics has cumulative values. Analogous cases exist in all subjects.

In addition to the cumulative nature of the content of school subjects, there is a sequential character in the procedure used in the study of successive topics or materials. The advantages of this sequential treatment are fully enjoyed only by subjects which are always pursued in a certain sequence. Mathematics and foreign languages have such advantages, while history and literature do not. That a fixed sequence would have advantages in history is asserted by

Tryon.[8] This assertion is supported also by Judd, who has suggested four stages at which successive demands in procedure could be required of pupils.[9] The first stage demands only the ability to follow the story, little explanation of events being expected of pupils. The second stage demands an understanding and correlating of physical facts, as geographical conditions, which influence history. The third stage demands a critical study of historical evidences as found in source materials. The fourth stage demands a critical comparison of historical interpretations as given by different authorities. In contrast with cumulative subject matter, as in geometry, where the method remains essentially the same throughout the course, the emphasis in such an organization of history is upon cumulative values found in sequential method.

The foregoing comparison of subjects considers only one course in mathematics and a sequence of courses in history. If the entire sequence of courses in mathematics is considered, one finds the situation roughly conformable with the four stages described by Judd. The first stage in mathematics is devoted to simple experiences with numbers, the second to the development of principles and simple applications, the third and the fourth to the understanding and application of interrelated materials and principles. Similarly increased demands at successive stages are made in all sequentially organized subjects.

The sequential and cumulative character of any year's work in a course is also common to all subjects when they

[8] Rollo M. Tryon, *The Teaching of History in Junior and Senior High Schools* (Ginn and Company, 1921), Chapter V.

[9] C. H. Judd, *Psychology of High School Subjects* (Ginn and Company, 1915), pp. 456f.

are well organized. Geometry was cited as an example of this, because this subject is always so organized. History has the same character when day-by-day or piecemeal learning of facts gives way to the continuity which is emphasized by all historians. Then the unity of all human experience and an understanding of the present in the light of the past follow. As Hill says, to-day becomes the sum of all yesterdays.[10] Interrelationships of an analogous character can be found in any subject by any one who is competent to teach it.

3. Interrelationships as a basis for transfer of training. This discussion has been extended, because the interrelationship of subject and method within a subject and among different subjects is the basis for the transfer of training. The term transfer of training is one of the simplest and also one of the most important characteristics of school subjects. It consists simply of using either content or method and their accompanying attitudes in one situation after they have already been acquired in another. Any subject that has been learned well enough to give training in useful subject matter or methods or attitudes can be applied to later situations. Transfer takes place preëminently within each subject, just as it does within each branch of an occupation, but it occurs also among various interrelated subjects and occupations.

Although the concept of the transfer of training is simple, the process by which it takes place is not. It requires the ability to see and act upon relationships. This process occurs with subject matter or method, when one situation is known and understood well enough to admit of transfer, and when

[10] Howard C. Hill, "The Supervision of Social Studies," Chapter VII in *The Supervision of Secondary Subjects,* Willis L. Uhl, editor (D. Appleton and Company, 1929), p. 306.

another situation is seen to have elements that are similar to the first situation. To the person who is expected to make the transfer, the relationship between the situations seems simple or even obvious after it has been noted. It is not always obvious to the learner, and, therefore, transfer is not an automatic or necessary consequence of the mere presentation of similar situations in a sequence. One of the simplest cases of transfer is found in mathematics when, after learning how to solve a problem of a given pattern, a pupil solves additional problems of the same pattern, although the language of the successive problems is different. When the learner proceeds through problems in the four fundamental processes of arithmetic to a problem in which all these processes are involved, the transfer is more complex. When he proceeds from the logical method of geometry to a problem in history or any other subject, he may transfer the method learned in geometry. If he generalizes upon his experience in this manner, he is working upon a still higher level. Concepts then interpenetrate, as Orata asserts, and by their interpenetration are applied to varying situations and enriched in content.[11] These stages in transfer approximate the stages in history, mathematics, and other subjects as mentioned above. That transfer of this sort can take place in the laboratory as well as in the classroom has been shown by Coover [12] and Rugg.[13] As situations are sometimes similar in certain respects and dissimilar in other essential respects, transfer, as Webb has shown, may temporarily in-

[11] Pedro T. Orata, *The Theory of Identical Elements* (The Ohio State University Press, 1928), p. 177.

[12] J. E. Coover, *Formal Discipline from the Standpoint of Experimental Psychology,* Psychological Monographs, Vol. XX. No. 3, 1916.

[13] Harold O. Rugg, *The Experimental Determination of Discipline in School Subjects* (Warwick and York, 1916).

terfere with the learning of a new pattern of conduct.[14] Such interference is increased when the second situation is attempted before the first has been thoroughly learned.[15] This happens if a pupil attempts to proceed too rapidly in any school subject.

The pedagogical significance of the transfer of training has been well summarized by Whipple.[16] The six points which follow epitomize the present discussion as well as Whipple's summary.

"1. Teachers should arrange the work of pupils and their own instructional efforts in such a way as to facilitate the conscious recognition by the pupils of the methods by which efficient mental work is done.[17]

"2. A skillful and 'artistic' teacher will take pains to see that facts are so presented that pupils draw out the relations between these facts and utilize these relations in the handling of other sets of facts in which similar relations obtain.[18]

"3. Teachers may expect bright children to surpass dull children in the amount of transfer gained from specific training; moreover, in proportion as the child's intelligence is inadequate, in that proportion must the teacher himself consciously and purposefully bring the child's attention to the relations to be educed and to the use of these relations subsequently. Even when aided by such skillful instruction, the spread of training will be decidedly less in the dull.[19]

"4. The possibilities of the transfer of training should be found at their maximum in children, whose mental activities are still in

[14] L. W. Webb, *Transfer of Training and Retroaction,* Psychological Monographs, Vol. XXIV, No. 3, 1917.

[15] Edward C. Tolman, *Retroactive Inhibition as Affected by Conditions of Learning,* Psychological Monographs, Vol. XXV, No. 1, 1917, p. 48.

[16] G. M. Whipple, "The Transfer of Training," Twenty-Seventh *Yearbook,* Part II (National Society for the Study of Education, 1928), pp. 179–209, especially pp. 203–209.

[17] *Ibid.,* p. 203.

[18] *Ibid.,* p. 204.

[19] *Ibid.,* p. 205.

the formative stage. While adults possess a much higher intrinsic capacity than do children to effect the education, the conceptualization, and the applications of relationships, this capacity is less evident in practice simply because the vast majority of these relations have already been educed, conceptualized, and applied under the stress of the extended daily experience and training they have already had.[20]

"5. It is not only probable, but fairly certain, that some of the most important agencies of transfer are to be found among the higher-level relations, in generalized attitudes, moods, ideals, sets, ways of going about mental operations generally. These agencies are in the nature of the case obscure; the nature and extent of their participation has occasioned extended argument, largely futile because so little is known factually. Further study is much needed, but difficult. In the meantime the educator is not justified in resorting to any specific subject of instruction for the purpose primarily of deriving from it indirect training values, but neither is he justified in neglecting to derive from every subject all the training value that it seems to promise.[21]

"6. It is particularly in the field of moral education that there has prevailed a general and uncritical acceptance of the dogma of formal discipline. While it is probably true that through the agency of the higher-level relations there may occur an important development of certain quasi-moral attitudinal traits, there has been no clear experimental demonstration of this transfer and it remains precisely in this important field of moral education that we know least about the possibilities or the limitations of training." [22]

The transfer of attitudes from one situation to another is a common experience of every one, and it is cited in many reports of investigations of transfer. This is often the mere continuance of an attitude of gloom or of buoyancy through a day. It may follow a depressing or elevating experience of either a waking or dreaming condition. At other times, it is associated with certain types of experiences, as those

[20] *Ibid.*, p. 206.
[21] *Ibid.*, p. 208.
[22] *Ibid.*, p. 209.

which have been accompanied by distractions. One becomes able to disregard distractions in later situations. The same is true of other attitudes. Confidence in the outcome of a given experience may follow the successful performance of a prior task. In the transfer of attitudes, as in that of subject matter or method, the counsel of the teacher is often needed. This counsel is sometimes called inspirational, if the attitude to be transferred is one like confidence or self reliance; but the transfer is dependent, in such cases, upon a previous successful experience. If one examines instances of the transfer or continuance of attitudes, one finds a close similarity between this transfer and the generalization involved in all other transfer. In all cases, transfer is a mechanism of progressive conduct, and, of course, it involves the six usual functions of improved adjustment. For this reason, transfer of training in one form or another is the most frequent and the most important of the characteristics which are common in the learning of all school subjects.

Characteristics Which are Predominant in Certain Subjects

Except for content, no school subject has a monopoly upon any of the mental functions. The content differences among subjects require no discussion at this point. All subjects are designed for the improvement of conduct in their respective divisions of human conduct. Some require motor coördination of the manual variety, and others of the vocal variety. Some require problem solving chiefly by formulæ, and others by combinations of formulae and manual dexterity. Some emphasize knowledge gained chiefly by audi-

tory channels, and others that which comes mainly through visual or through tactile channels.

If a pupil, from habit or from native equipment and habit, excels in acquiring and using knowledge from one or more channels, he can excel in school subjects which require such knowledge. A pupil whose motor equipment is accompanied by facility in auditory and visual memory and in generalizing is likely to excel in foreign language. One who is facile in memorizing and generalizing is likely to excel in mathematics. With a given ability in memorizing isolated words, a group of pupils would vary in the memorization of words in context according to their respective concomitant interests in the context and their respective generalizing capacities. One pupil might excel in memorizing words in an historical setting and another in an athletic setting. Motivation rather than native equipment would then influence the ease of learning different content. Each subject lies outside the interests of certain pupils, and the learning by those pupils, even if they have the other needed equipment, is seriously impaired unless they can be adequately motivated. Physical and physiological conditions influence learning in certain subjects, as handwriting and violin playing, differently than they do in mathematics or home economics. A happy combination of equipment and motive could probably be formulated for each subject.

In the following sections, the essential psychological principles of learning in eight divisions of school subjects will be discussed together with pedagogical applications of these principles. Were time, space, and endurance available, a volume could be written on each of the fifty or sixty subjects offered in many large schools. It is hoped that the treatment of these eight basic divisions will be useful in the guiding

of learning at all levels of instruction and also, through generalization, in the directing of learning in each of scores of different subjects which are, in a sense, offshoots from these divisions.

Special Applications of Psychology in Different Departments

A. *Science*

Science, as a school subject, is essentially knowledge of natural phenomena. Science study is intended also to lead to scientific attitudes and the ability to apply knowledge to problems in or related to science. This knowledge is acquired by first-hand observation and interpretation of data and by studying what others have discovered and recorded. Except for the sheer difficulty of learning without external objects and without actually doing, scientific knowledge could be learned by reading and by solving problems whose data are derived from scientific observation or experimentation.

Science begins with the unsystematic nature observings of children and continues through stages analogous to those of history, as mentioned above. Observation is a means for getting data. After the data have been collected, arranged and evaluated, they are interrelated by discussion, reading, and interpretation with whatever else is already known and conclusions are drawn.

The limitations of observation without special technique and apparatus necessitate experimentation, as described in Chapter VII. For almost every one except the professional scientist or one who aspires to that profession, experimentation is only a method of learning; it is seldom a method of discovery in science as a school subject. It may be original

for the learner, but it is not original for mankind. Instead, it is a means of reënforcing data which have already been recorded upon the printed page. It is believed that first-hand data are more vividly and accurately impressed than those which are got simply by reading. Experimentation is, in part, a method of observing.

Experimentation is also a method of problem solving. A problem is stated, apparatus and materials are supplied with directions for use, the equipment is set up, observations are made, and data are treated as in all other observation. Instead of having each pupil perform an experiment, many teachers ask the pupil only to observe while they perform the experiment. This procedure deprives the pupil of manipulation of the apparatus, but it often frees him for more carefully directed observation. As the measure of the effectiveness of observation in school science is usually in terms of scientific knowledge and understanding as indicated by examinations, the merits of individual experimentation and lecture demonstration are so nearly equal that investigators have been unable to discover which is the better method.[23] As training for the professional scientist, individual experimentation gives valuable training in handling apparatus as well as in observing.

In addition to problem solving in experimentation, there is the solving of problems whose data are supplied to the learner. While laboratory problem solving is object teaching in which the learner manipulates the objects and collects and treats the data, problem solving with supplied data involves only the treatment of some one else's data. If laboratory data

[23] C. C. Weidemann, "An Evaluation of Individual and Lecture-Demonstration Laboratory Methods for High-School Science," *Junior-Senior High School Clearing House,* IV, 463–470 (April, 1930).

are more vivid, they are probably better for problem solving than supplied data, although the latter can be used for practice.

Reading and listening to lectures are essential in the learning of science, for the work of others clarifies and supplements the results of observation and experimentation. Their relation to observing and experimentation is, in some respects, like that of supplied data to pupil-collected data in problem solving. If the reader or listener can get a sufficiently vivid and adequate knowledge of nature without supplementary first-hand data, his needs are met by these procedures. That reading is a desirable substitute for a part of what is sometimes obtained from the laboratory is indicated by Noll.[24] Curtis found also that extensive reading in general science increases pupils' interest in science.[25]

If the science pupil is successful, he acquires attitudes which are essential in science and in all other critical study. These attitudes are as follows:

"I. Conviction of universal basic cause and effect relations, rendering untenable
  "a. Superstitious beliefs in general, as 'signs' of 'good or bad luck,' and charms:
  "b. 'Unexplainable mysteries,'
  "c. 'Beats all' attitude, commonly revealed by
    1. Too ready credulity;
    2. Tendency to magnify the importance of coincidence.
"II. Sensitive curiosity concerning reasons for happenings, coupled with ideals
  "a. Of careful and accurate observation, or of equally careful and accurate use of pertinent data previously collected by others;

[24] Victor H. Noll, *Laboratory Instruction in the Field of Inorganic Chemistry* (University of Minnesota Press, 1930).

[25] F. D. Curtis, *Some Values Derived from Extensive Reading in General Science* (Teachers College, Columbia University, Contributions to Education, No. 163, 1924), p. 112.

"b. Of patient collecting of data;
"c. Of persistence in the search for adequate explanation.
"III. Habit of delayed response, holding views tentatively for suitable reflection (varying with the matter in hand),
"a. To permit adequate consideration of possible options;
"b. To permit a conscious plan of attack, clearly looking forward to a prediction of the probable outcome, or solution.
"IV. Habit of weighing evidence with respect to its
"a. Pertinence,
"b. Soundness,
"c. Adequacy.
"V. Respect for another's point of view, an open-mindedness, and willingness to be convinced by evidence." [26]

The psychological problems of science study are those of the procedures of acquiring knowledge of natural phenomena, of acquiring scientific attitudes, and of improved human adjustment through problem solving scientific knowledge. The acquiring of knowledge in science is not unique. Its characteristics have been presented in Chapter III. There are difficulties, however, which may properly be discussed here.

The acquiring of knowledge of natural phenomena through observation begins at birth and continues throughout life. What is gained through observation may or may not have value in science, for much observation is naïve. The more one observes, the worse one's knowledge of facts may be. The quality of the observation determines its value. Nonessential characteristics may be noted and essential aspects overlooked. As common a flower as the dandelion may be observed for years without any noting of its composite character. Coarse bread may be eaten as health food by persons who are injured by it, but who naïvely assume that,

[26] *Ibid.*, pp. 48–49.

because it is better for certain persons, it is better for themselves. The psychology of testimony, as summarized by Gault, offers many examples of sheer failure to note conditions which are more important than those which are noted.[27] As stated in Chapter VIII, one may even produce elaborate drawings of natural phenomena without having an adequate notion of the objects represented by the drawings. These failures to note essentials when objects are observed is usually reduced if the observations are made with reference to certain functional characteristics. In drawings or diagrams of birds, for example, significant characteristics may be shown to indicate the relation between length or shape of bills and their mode of getting food. Observation then acquires accuracy and, when systematically pursued, gives a foundation for science. The lecture demonstration probably gains in observational value as compared with individual laboratory work, for the lecturer directs pupils' attention to the essentials in the experiment which is performed.

Experimentation, as stated above, is, in part, refined observation and, in part, a method of problem solving. Not all that is called experimentation has these two characteristics. Apparatus may be used or specimens may be examined with little exactness and with reference to no problem that is vital to the pupil. Pupils should be made aware, probably, that their "experiments" are not always experiments in the same sense as are the investigations of the scientist. These exercises are performed only once, and often clumsily. They are, at best, "originals" like those of geometry and trigonometry. They are often only devices for drill, and, although

[27] Robert H. Gault, *Criminology* (D. C. Heath and Company, 1932), Chapter XIX.

defensible as means for learning, they are not essentially different from drill devices of any other subject except in content.

The interpretation of data, like observation, may or may not have value in science. Folklore contains numerous interpretations, but few of them are correct. Hundreds of false interpretations of natural phenomena also infest civilized peoples. Scientific interpretation must be learned as a method of impartial and exact process in verifying conclusions.[28] As interpretations are solutions or partial solutions reached through problem solving, they are affected by the quality of data used as well as by the method of treating the data.[29] Caldwell and Lundeen's investigation of the effect of science study upon the abandoning of unfounded beliefs—false interpretations—are significant in this respect.[30] They found that specific facts related to unfounded beliefs are necessary for the abandoning of such beliefs. Since many unfounded beliefs about natural phenomena have marked effects upon society as well as upon science, such studies indicate the relation of science to social competence.

As science involves chiefly the first four mental functions, there is no reason for attempting to defend the values of this subject for the creative and æsthetic functions. The presence of such values and their pedagogical significance for certain students must be obvious, however, to every one

[28] Ralph E. Horton, *Measurable Outcomes of Individual Laboratory Work in High School Chemistry* (Teachers College, Columbia University, Contributions to Education, No. 303, 1928).

[29] S. R. Powers, "The Psychology of Science Teaching," Thirty-first *Yearbook,* Part I (National Society for the Study of Education), pp. 59–75, 68.

[30] Otis W. Caldwell and Gerhard E. Lundeen, *An Experimental Study of Superstitions and Other Unfounded Beliefs* (Bureau of Publications, Teachers College, Columbia University, 1932).

who has looked closely at a snowflake or who knows anything of art or acoustics. The efficacy of such interrelating of subjects and interests has probably been sufficiently emphasized in what precedes this section.[31]

B. *Mathematics*

Perhaps more than any other subject has mathematics suffered from poor teaching and misconceptions about its place in the cultural regimen of the pupil. Psychologically, mathematics is a fundamental subject, for it deals with the acquisition of fundamental data such as space perception and quantity. As Judd points out, however,[32] there is a difference between a concept of space which one acquires by a process of chance personal generalizations and the scientific idea of space-time based upon mathematical and psychological reasoning. In discussing the psychology of time, Sturt points out that time is a psychological datum based upon experiential evidence.[33] The same may be said for space. Minimum units in both time and space depend upon minimum perceptual duration. It is to the mathematics teacher that the systematization and clarification of the pupils' ideas of time and space are entrusted.

Another vitally significant task of the mathematics teacher is to teach the science of numbers. Many treatises have been written upon the development of the number concept in children, and, although complete agreement has not been

[31] See *Progressive Education,* Vol. VIII, October, 1931, for discussions of "The Child and Science."

[32] Charles H. Judd, *Psychology of Secondary Education* (Ginn and Company, 1927), p. 71.

[33] Mary Sturt, *The Psychology of Time* (Harcourt, Brace and Company, 1925).

reached as to the genetic factors involved, consistent improvement has been made in the teaching of number. Judd insists upon number as a social system,[34] not only in the sense of being a mode of thought, but also in the more restricted and practical sense of being the medium through which society measures and transacts its quantitative business. To name all the subjects or human pursuits of which mathematics is at least the partial foundation would be to give a long list.

It is maintained by some that, in addition to giving valuable specific meaning as the basis of such pursuits as engineering, mathematics provides general training of the reasoning ability in a way in which other subjects do not. Evidence on this point is contradictory. Orata reviews some of the evidence, but a final conclusion on this point can not yet be given.[35] All subjects, when properly taught, possess values which carry over into fields other than the one being studied. In the experimental work which has been done so many variables have been operative that it is practically impossible to come to any definite conclusion. Geometry is sometimes favored as an entrance requirement by universities and colleges on this ground. That geometry in particular may possess items of content which when correctly taught give unusual reasoning ability is quite conceivable. One is tempted to believe, however, that the transfer value may be as much inherent in the method as in the mathematical content.

A few words may be devoted to each of the separate phases of mathematics:

[34] *Op. cit.*, p. 40.

[35] Pedro T. Orata, *The Theory of Identical Elements* (The Ohio State University Press, 1928).

1. Arithmetic. A divergence of opinion exists among mathematicians about the place and merits of arithmetic. Some maintain that arithmetic is a necessary foundation for all mathematical science. Others claim that the fundamental problems of mathematics verge closer to philosophy and that notions of space-time, etc., may be acquired with practically no exact arithmetical knowledge. However this may be, it is plain that in the subjects in which arithmetic is required it must be well mastered. Morrison, although writing upon teaching in secondary schools, digresses to comment upon the "critical importance of the primary adaptations" in mathematics.[36] Morrison shows that even bright children who seem to be well trained in the fundamental mathematical processes are actually exhibiting only a specious aspect of knowledge and are not grounded in the basic conceptual data. He lists a considerable number of primary mathematical adaptations necessary and, in addition to naming the ability to perform the common number operations, includes a statement of psychological concepts which must be developed concomitantly or earlier. Among them are

(a) The concept of number,
(b) The concept of multiplication and division, and
(c) Concepts of measurement, elementary spatial concepts.

The essence of elementary mathematical training is mastery of the material. Motivation is desirable and possible. But elementary mathematics is not an appreciational subject. The risk of destroying the beauty of the learning by analysis and practice must always be taken. The teaching procedure

[36] Henry C. Morrison, *The Practice of Teaching in the Secondary School* (The University of Chicago Press, 1926), p. 209.

is, of course, drill. It may be disguised in many ways. The amount of drill by individual pupils may differ. The amount needed under different teachers may differ. But mastery must in the end result.

2. *Algebra.* Properly taught, algebra may be as interesting as a detective story. It is the introduction to the search for the unknown. Its multiplex operations, plus and minus numbers, quadratic equations, etc., are far more easily endured by the high school pupil when he understands likewise that they are merely elements in an elaborate game of hide and seek. Too often high school teachers of mathematics allow children to slip into the intricacies of the operations themselves before they realize the one fundamental objective of the whole performance. It is all very well to state the objective of mathematics in long subheaded lists for purposes of college seminars in curriculum construction. In the actual classroom, however, the teacher must be able to state an objective which is comprehensive, meaningful, and real to the pupil. Most pupils can be interested in the more or less romantic search for an unknown quantity. It takes but a few examples which every high school teacher ought to be able to supply to make clear to high school pupils that those colorless looking letters, figures in equations, may actually be translated into terms of human suffering and happiness. The engineer who has the wrong formula or is too ignorant to use the right one may build a bridge which will collapse and cause the death of dozens of people. Although the logic is not flawless in some of these illustrations, the gain in motivation sometimes more than compensates for the lack in logical accuracy. Students can usually be interested in a challenge to prove that one dollar is equal to no money at all. All algebra teachers are familiar with the specious proof

that one equals zero. Many an algebra class has been motivated briefly by that one simple device.

3. Geometry. Mention has already been made of the claim that geometry has unique advantages as a means of training in observation and logic. It may be taught in the most deadening fashion and result in nothing except a routine exercise in brute memory. The psychological essence of the subject of geometry is the original problem and yet, how many schools omit originals entirely! Some of the old line mathematics teachers criticize the more recent "simplified" mathematics on the ground that the tough originals which afforded such excellent training were largely cut out of the newer editions. If this be true, it is psychologically a sound criticism. Memorizing of theorems by pupils who have absolutely no idea of the genesis of the proof is no training *ipso facto* whatsoever in developing logical ability. Pupils have been known to be unable to give the proof for a theorem when the letters denoting the various parts of the figure were changed. This is not evidence of pupil stupidity entirely. It is just as much evidence that the essence of the proof was lost upon the pupil and the change in superficialities produces confusion because the superficialities were all that were ever learned. The best geometry teachers at the present time are extremely reluctant to let pupils memorize theorems and prefer to have pupils figure out the theorems in the same way in which they would originals. As a matter of fact, it is not at all impossible, although it requires a class of fairly good ability, for the teacher to present geometry entirely inductively and with a little guidance have pupils work out for themselves all the main theorems in geometry. Even when originals are worked out following a text, as much emphasis should be paid to method as to securing

answers. In the experimentation by Dashiell which was described in Chapter X it was clear that method as such must be learned as well as content. There is no more evidence that the content of geometry so far as it is represented by theorems and corollaries represents *per se* any transferable logical ability than there is that the substitution method of Dashiell's experiment would transfer of its own accord with no practice in the alteration of method itself.

In conclusion, it may be said that the field of mathematics is not only a technical but a social and psychological field as well. It may be noted that the primary objectives are:

(1) Mastery upon the lower primary levels
(2) Development of a technique for the search for unknown quantities in intermediate levels
(3) Solving of problems of primarily spatial relationships in the case of geometry.

It may be further noted that the predominant error in the teaching of mathematics is the emphasis upon content and a failure to provide a methodological counterpart for the stated sociological objectives. Probably the best experimental work in the field of mathematics has been done in refining and improving the pedagogy of the fundamental processes, such as the multiplication table. There need to be equal concern shown and equally good techniques developed for the guaranteeing of the cultural and logical values so often held for mathematics.

C. *Language*

1. The psychological significance of language. All language, be it vernacular or foreign, is the same in its psycho-

logical essence. Language might be termed crystallized or symbolic conduct. But crystallization does not imply that language is a static thing. On the contrary, it is dynamic and changing. It is a medium for progressive conduct, for through language past conduct is preserved and future conduct projected. Elementary forms of language such as picture writing bear an obvious resemblance to that for which the language stands. Later linguistic evolution results in more symbolical terms and requires more intermediate conditioning for learning.

2. Language and mental functions. American and British psychologists have been much interested for many years in the relation of language to thought. Language is one of man's attributes which sets him apart most distinctly from the lower phylogenetic species. Lower animals undoubtedly possess methods of communication. Comparative biology contains many interesting descriptions of the methods of this communication. But communication in highly symbolical terms occurring in multiplex combinations is confined to man as far as is known.

Certain psychologists have held that mental functions, especially thought, depend entirely upon the action of the language mechanism. Watson, of this group, holds that language is the most outstanding behavior difference between the lower animal life and man and that in man, thinking may be explained by subvocalization.[37] Whether or not mental functions depend entirely upon the operation of the language mechanisms is still open to question, but that much thinking is carried on through the process of language can not well be denied. Subtlety of mental organization is indi-

[37] Sidney Adams and Francis F. Powers, "The Psychology of Language," *Psychological Bulletin,* XXVI (1929), 241–260.

cated in no better way than by subtlety of language organization.

3. Psychological nature of the communicative process. In thinking of the problem offhand it is easy to assume that communication is a uni-directional matter. One has something to say. He says it. The communication is ended. According to Pillsbury and Meader this is not characteristic of communication.[38] In communication there must be a closure of the communicative cycle. The act passes through such a cycle and finally returns to the original individual. The return may be of several sorts. It may be language spoken in return. It may be action meaningful to the original speaker. Even in cases where no reply is expected directly the answer is assumed.[39]

4. Common faults in language teaching. The most frequent errors in language teaching are psychological and not technical. Klapper, in his introduction to Gray's *The Teaching of Latin,* gives his opinion that Latin teachers taken as a group have been more directly responsible for the decreasing prestige of Latin as a school subject than any other single practice. Among some of the common faults of language teachers may be noted the following:

(a) Over-emphasis on routine memory
(b) Too much drill on little used forms [40]
(c) Over-emphasis on grammar and syntax
(d) Failure to capitalize social values of the subject
(e) Failure to have the language provide training in desirable attitudes and methods of attack.

[38] W. B. Pillsbury and C. L. Meader, *The Psychology of Language* (D. Appleton and Company, 1928), p. 12.
[39] *Ibid.,* p. 12.
[40] Francis F. Powers, *A Diagnostic Test in First Year Latin,* unpublished Master's thesis, University of Oregon, 1927.

In general it might be said that over-emphasis on matters of form at the expense of the spirit of the language and the conveying of meaning clearly is one of the prime difficulties. Leonard, in discussing current English usage, mentions a pronounced tendency toward democratization of usage.[41] The same is true in the study of modern foreign language when interest and expression of thought are killed by too much attention to formalistic features. This type of language teaching fails to show an understanding of the fundamental nature of language itself. Vocabulary learning, for example, is a basic thought process, and extended acquisitions in this field are among the best indices to complexity of mental organization. When one language is the sole acquisition, the sound of the word and the mental perception of the object are apt to be closely associated. Multi-lingualism is a long step in the direction of abstract thinking. For the person with more than one language at his command has several symbolic cues attached to the same idea or object, and this complexity of connections is the psychological essence of abstraction. Furthermore, regardless of the direct usage of any one or many of the languages, both increase in amount of a given language and the acquisition of several languages tend to increase the fundamental comprehension unit. Language teaching should take cognizance of these points and aim toward these larger values rather than the rigidly circumscribed formal objectives.

5. *Vitalized language teaching.* It is a happy circumstance that recent years have seen many efforts made to vitalize language teaching of various sorts. Reference has already been made to one of the standard works in Latin. The Modern

[41] Sterling A. Leonard, *Current English Usage* (The Inland Press, 1932), Foreword, p. 17.

Foreign Language Investigation, as comprised in a seventeen-volume report, is a commendable effort in this field.[42] The following items should be stressed in foreign language teaching:

a. Versatility in method: Any foreign language teacher should be equally adept in teaching the language directly or indirectly. There is no reason in the world to suppose that the direct method is particularly good for all students. Some will never have any occasion to speak the language. For them, although some values are lost through not speaking the language, the reading method is far better taken as a whole. Since the class is heterogeneous in its composition the nearest approach to satisfying conditions is a combination method.

b. Use of realia wherever possible: Teaching devices such as games, etc., have in the past been viewed askance. At present, they are entirely reputable although the prominence of the place which they should occupy is not clear. Cole lists the following sorts of realia:

(1) Foreign language clubs
(2) Dramatic representations
(3) Songs and music
(4) Phonograph and radio
(5) Films and slides
(6) Maps, charts and posters
(7) Foreign newspapers and magazines
(8) School and college papers in foreign languages
(9) Correspondence with foreign students.[43]

c. Keeping up with the experimental work on the pedagogy in language and following the reasonable findings

[42] *Studies in Modern Language Teaching* (The Macmillan Company, 1930).

[43] Robert D. Cole, *Modern Foreign Languages and Their Teaching* (D. Appleton and Company, 1931), pp. 227–253.

thereof: In this connection, the summary of the work by Seibert on French is of general interest.[44]

(1) Silent study is not as effective as studying aloud.
(2) Vocabulary is better learned when studied as such than in sentences. (Further experimental work tends to confirm this conclusion).[45]
(3) Distributed learning periods are much more effective than the same amount of time spent consecutively.
(4) The reading method is not so good as the recitation method in language learning.
(5) A reasonably high correlation obtains between retention in delayed and immediate recall tests.

These are the principal conclusions based upon Seibert's work, some others having more special reference to her own study. She concludes her study by criticizing the naïve acceptance of experimental results gleaned from bibliographies on experimentation. She suggests discarding all "obsolete, meaningless and inconclusive experiments." This is simple to recommend but hard to put into practice. What is really needed in the field of language as in other fields is an articulated and unified national program of experimental research directed to the solving of practical points of method. There is little question but that much effort is being duplicated in the experimental field. The obstacles to the formation of a national program of experimentation, however, are obvious. Investigations of the Modern Foreign Language Committee to which reference has been made are the best type of thing at hand at present. Until a more com-

[44] Louise C. Seibert, *A Series of Experiments on the Learning of French Vocabulary* (The Johns Hopkins University Studies in Education, 1932), p. 99.

[45] S. Smith and F. F. Powers, "The Relative Value of Vocabulary and Sentence Practice for Language Learning, *Journal of Social Psychology*, I (1930), 451–462.

prehensive program is found possible, reliance must be placed upon reports of this sort. But experimental results are not all that are needed. Some of those which Seibert mentions such as the most efficient method of vocabulary learning have already been well verified by several experimentors. The difficulty still existing is that of familiarizing teachers of modern foreign languages with the experimental work and the transformation of the same into applied classroom method.

D. *Literature*

The massacring of the Innocents is aptly applied by Ernest Raymond to the teaching of literature.[46] Few lovers of literature have been spared from witnessing such a massacre. How they gained a love for this form of art fills less space in the annals of pedagogics than the accounts of the massacres. Raymond suggested as much when he proposed to change the title of his discussion from "The Teaching of Literature" to "The Child and Literature and How we can best Destroy his Love for It." For that is what he meant by massacring the Innocents.

Instead of proceeding upon this unlovely task, he more graciously sketched the "Portrait of an Old Master." This old master, Elam, "did everything that was wrong and scandalous in the eyes of theorists." [47] His dress, his person, his vindictive language, his unpunctuality, his lack of dignity and system, and his abhorrence of the High Master of the school all marked him as enemy of propriety and conventionality. But he had a saving grace: he changed boys with little interest in life ex-

[46] "The Teaching of Literature," in *Education and Leisure,* S. E. Lang, editor (J. M. Dent and Sons, 1930), pp. 82–87.
[47] *Ibid.,* p. 83.

cept football into boys who went pioneering "through Shelley, Keats, Shakespeare, discovering with delight that this was a living, exciting adventure, as good (and indeed much the same) as . . . adventuring in the woods and up the hills and along the lonely streams." [48]

This Old Master was no pattern for teachers, perhaps, except in this art of leading boys to literature. Mr. Raymond's description of him is so deficient in statistical terms and experimental controls, that coldly scientific students should be warned against reading it. For those who are likely to succeed in contacting their pupils with life by contacting them with literature, a few of Elam's essentials may be mentioned. Elam knew literature and lived through it. He sizzled and spluttered with enthusiasm for it. He was honest enough to admit that he did not like all the classics any better than the boys did. He made his beloved classics so engaging that the boys had to read them. What they read, they had to interpret, for Elam's ideas were irresistible and intriguing. He lead the boys through literature to life and to more literature.

If an excuse must be invented for bringing Elam to the attention of teachers, it is this: he did for literature and living what thousands fail to do. The study of literature has failed signally, for want of teachers who know where to begin. Instead of recognizing that the primary appeal of this subject, whether in a foreign language or the vernacular, is to æsthetic experiencing, teachers proverbially, if not actually, begin with appraising. There is no complaint against appraising, but it comes properly only after something else has happened. Too often literature is approached and massacred, by methods which have been discarded by modern teachers of the ancient languages. Pupils are then left worse than they were found,

[48] *Education and Leisure*, p. 83.

for their initial neutrality toward literature has turned to hostility.

Accompanying æsthetic experience, there is creative activity in much literature study. This activity is often of the anticipatory type already described in Chapter III. Again, creative activity becomes more pretentious when the reader closes his book and attempts to create a satisfactory ending for the episode which he is reading.[49] Much creative work in language also receives its stimulation and pattern from literature that is being read. Both æsthetic experiencing and creative activity in literature study employ, of course, the data mentioned in Chapter III—moods, standards, and media of expression.

After æsthetic experiencing and creative activity in literature study come all the other mental functions. Problem solving occurs in many forms. There are problems of the literary plot, of comparison with other selections, of the appraisal of what is being read, of social competence, and so on. To solve any of these problems, one must acquire knowledge and use it skillfully. The usual formula for problem solving is employed, as in geometry: something is "given," something else is to be proved, at stages in the proof items of knowledge are adduced, steps in the process are evaluated, and finally a satisfactory solution is reached. If the problem is significant to pupils, its solution is likely to enhance æsthetic experiencing. That it seldom does so, unless preceded by such experiencing, is the testimony of pupils.[50]

The literary interests of pupils have been investigated for many centuries. These investigations emphasize the hazards of allowing certain teachers to present certain selections to

[49] *Cf.* G. H. Lewes, *The Life and Works of Goethe* (E. P. Dutton and Company, Everyman's Library, 1908), p. 14.

[50] See the reference to Coryell in Chapter IX.

pupils. Many selections are presented too early to pupils, while others are presented too late. The problem of remoteness of literary materials from pupils was discussed in Chapter IX, and the effect of the sequence of materials has been treated earlier in the present chapter.[51]

Desirable qualities which teachers and pupils report for their favorite literature are the following:

Dramatic or heroic action and adventure
Nondramatic action of interesting characters
Humor
Mystery and the supernatural
Interesting characters, home life, child life, knighthood, and romance
Portrayal of kindness, loyalty, and sympathy
Animal life and personification of animals
Character studies and other problems
Interesting information
Rhyme and rhythm
Interesting style
Worthy content [52]

Favorite selections usually have a combination of these appealing qualities. As both children and adults show interests in these qualities, the problem of grading literary materials is one of vocabulary, style, and general content rather than of the interests to which appeal is made. A superior presentation of relatively difficult materials is often successful, because of the emphasis given by the teacher to such appealing qualities as those in the above list.

Literature study is significant for the enrichment of life through vicarious experience. When of greatest value, this

[51] See also Willis L. Uhl, *The Materials of Reading* (Silver, Burdett and Company, 1924), Chapter IV.

[52] *Ibid.*, pp. 113 and 154. See also the references to Abbott and Crow cited in Chapter VIII.

enrichment is supplemented by the interpretation which accompanies problem solving. It then provides a background for the reorganization of the pupil's own experience and aids him in formulating his philosophy of living. This process is obviously dependent also upon many principles which have already been discussed.

Literature, at all stages of its study, and whether in the vernacular or a foreign language, may, then, involve all six of the mental functions. Certain literature is primarily expository or narratory, requiring chiefly the first three or four functions, while other literature is predominantly an expression of the emotions, involving chiefly the last two functions in combination with the others. The functions which predominate at any given time depend upon both the character of the literature and the purposes which motivate study.

E. *Social Studies*

1. Education as a social process. The discussion of social adjustment has emphasized the fact that the child, being born an egoist, spends much of the educational conduct of his early years in becoming socially adapted and in attaining social competence. Many lines of activity contribute to this development. Not only school work but also extraschool activity play a part. All school subjects have an influence. It is entirely natural that the social studies themselves, or the "newer humanities" as they are sometimes termed, carry a heavy part of this burden. Education as a social process consists primarily of the development of conduct which is effective in a social medium.

2. Objective of the social studies. The aim of the social studies and of all studies which contribute to the enhance-

ment of social competence is the preservation of the psychological integrity of the individual which must be directed toward social ends. One significant development of recent years has been the study of the place and nature of the social studies in the elementary school curriculum. The previous tendency seemed to be somewhat toward the reservation of the social studies for the junior and senior high school. Realization is increasing that correct social development on higher levels depends upon adequate social training on lower pedagogical levels. Regarding the work in the grade school as of vital importance is a prerequisite of an effective social study program. The following objectives of the social studies in the grade school recognize this emphasis:

"1. To give the child a simple understanding of how people live, work, and play together.

"2. To place before the child ideals of worthy citizenship (a) by dramatic interpretation of the lives of our historical heroes and (b) by giving him an environment where he may exercise leadership, organization, creative effort, responsibility, toleration of the motives of others, and patience.

"3. To stimulate an appreciation of the achievements of the past and a desire to enrich the social heritage.

"4. To give the child a simple background of world geography that will enable him to see the interdependence of the peoples of the world.

"5. To open the eyes of the child to the beauties and the wonders of the physical world.

"6. To place before the child ideals of health through the field of information, through dramatic interpretation of those who best embody these ideals, and through the creating of situations for the child that will call for an appreciation and practice of the rules of health and hygiene." [53]

[53] "General Objectives of the Social Studies." *Teaching,* June, 1932, p. 3.

The above objectives are based upon a definite psychology and philosophy of education. Some of the major tenets of this point of view as stated in this same bulletin are as follows:

"1. There should be an integrated course of study in the primary grades, but the entire curriculum cannot be an outgrowth of activities as it can in the more advanced grades where the pupil has command of the simple tool subjects. (Arithmetic and reading will need special periods for a systematic instruction until the reading and arithmetic adaptations are made.)

"2. Social materials and activities should form the core of the primary curriculum, for this curriculum furnishes the natural means through which the child begins to make adjustments with his environment.

"3. Knowledge comes from experience; the teaching of mere facts makes little change in the pupil's behavior patterns.

"4. The teacher should begin with the child's immediate environment, but should not remain there. The familiar thing should be used to lead to the unknown. The bottle of milk leads out to the dairy, the electric milker, cleanliness of barns and utensils, feed, alfalfa, baling machines and other farm productions and equipment.

"5. Citizenship ideals are best acquired through the activity program because such a period affords a natural life situation; only through application do ideals become vital and so function in behavior.

"6. The attitudes and appreciations formed in the use of social materials are as important as skills and meanings; it is as important that the child make a beginning of an appreciation of how much he knows as it is that he know the facts.

"7. By studying primitive life, the young child gets his clearest idea of the benefits of the division of labor. Society to-day is too complex. But such activities as building an Indian wigwam, making a fire without matches, and trying to make a squirrel skin soft enough for clothing give a primary child an idea of the benefits of the division of labor and a beginning of an appreciation of the rewards of trying to do things in a better way.

"8. The activity curriculum makes for better health; sitting still for long periods is unnatural for a child and detrimental to his best physical development.

"9. Children are naturally interested in other children, even

those of other lands—how they dress, what they play, what their homes are like. An early attitude of friendliness toward people who dress differently, talk differently, act differently, can be instilled.

"10. World geography is becoming of vital interest to primary children because of the radio, moving pictures, and printed materials available.

"11. When a child is very young is the best time to interest him in nature. Excursions offer valuable concomitant learnings aside from facts gained of the great outdoors; outdoor activities enrich the background, provide enjoyment and use of leisure time, and build up physical growth and resistance.

"12. The class discussions arising in the social science activities afford the best and most natural opportunity for growth in oral expression.

"13. In proportion to the enriched background given children, the adult (a) will be provided with the necessary background to make his reading an enjoyable leisure-time occupation and a constant and dependable source of information, and (b) will be provided with the beginning of a background necessary for intelligent observation of world affairs and efficient participation in them." [54]

3. Instrumental institutions. It has often been pointed out that to give correct preliminary social training the school must at least reflect if not actually be the real social situation. Folsom indicates that the following institutions are important in social and cultural development:

(a) Language and number systems
(b) The press
(c) The educational system
(d) Scientific research
(e) Material culture
(f) The economic system
(g) The kinship system
(h) The military system
(i) Government [55]

[54] *Teaching,* June, 1932, pp. 4–5.

[55] Joseph K. Folsom, *Social Psychology* (Harper and Brothers, 1931), p. 496.

Although the educational system is included as merely one of this list, in actual practice the tendency is for it to reflect in part all the other instrumental institutional influences upon the individual's social and cultural development. The others touch the child separately, but during the actual school period the educational system occupies a position of unusual importance.

4. Development of social concept. The genetic study of the development of social concept in children's minds is worth while. It has long since been recognized that children come to school with a varying content in all subjects. This is true of social concepts. The psychological teaching of the social studies demands that the teacher make an effort to find out the ideas which each pupil already possesses upon phases of the social studies. Meltzer has studied this problem and concludes that the personal interview is the best method to gain this information.[56] Meltzer found further that, although children vary in the original amount of basic social knowledge, the curriculum has a very real, measurable, and demonstrable effect upon the development of children's social concepts. It should be noted here that the development of such concepts in this field follows the principles of learning. Procedure must be from the concrete to the abstract based upon a thoroughly adequate sensory background.

5. Unification in social science. Much discussion has arisen over the best method of teaching the social sciences. The traditional method recognizes several branches including history, geography, and civics. Students of the genetics of contemporary civilizations have, at times, inclined toward the

[56] Hyman Meltzer, *Children's Social Concepts* (Teachers College, Columbia University, Contributions to Education, No. 192, 1925), p. 96.

unified course as giving the best picture. Rugg is among this group.[57] He maintains and introduces considerable evidence to back his point of view that, in order to understand correctly present-day life and its origins, the various contributory social sciences must be called into play simultaneously. For example, to understand the industrial expansion in the United States it is necessary to have in mind geographical information. To comprehend wars it is valuable to know not only geography but also economic backgrounds. Civics requires some familiarity with geography, history, and economics. There are two ways of meeting this situation. One is to assume that some of these subjects are more fundamental than others. These may then be made prerequisite to the others. The difficulty with this assumption is that the facts do not seem to entirely bear it out. It is difficult to demonstrate a hierarchy in the social studies. It is practically impossible to pursue any one of the social studies without dipping into the others. The second method of handling the problem is to have the unified course for which Rugg argues. This, as Rugg emphasizes, possesses a "close relationship" between social studies. It is possible that this point of view will come to be the commonly accepted one, since it seems most in accord with psychological methods of teaching. The series of brochures published under the general title "Achievements of Civilization" by the Committee on Materials of Instruction of the American Council on Education also seem to have this theory in the background. Koos has given a good description of some of these new readings in the social studies.[58] As subject matter specialists disagree

[57] Harold Rugg, *Changing Governments and Changing Cultures* (Ginn and Company, 1932), Preface, p. 7.

[58] "Educational News and Editorial Comment," *School Review,* XL, 727 (December, 1932).

with the protagonists of a unified social studies program,[59] judgment of it may well be held in abeyance.

6. Psychological method in the social studies. The following suggestions may be made as to the pedagogy of the social studies according to psychological principles:

a. Instruction in the social studies should embody, above all other things, a recognition of individual differences ascertained in some such method as the one described by Meltzer. An effort should be made to encourage a sane individualism along with a pronounced socialization. Socialization should consist partly of the acquisition of common concepts and social ideals.

b. Instruction should proceed, as in other subjects, from the concrete to the abstract. It must be recognized that it is impossible for children on the junior or senior high school and collegiate levels to attempt to study the theory of government when a foundation in fact is entirely lacking. The task on the lower school level should be to acquire facts. The aim in the intermediate school should be to increase the acquisition of facts and to begin a process of evaluation. The task on the secondary school and higher levels should be the acquisition of some more facts with the primary emphasis upon evaluation and interpretation. The social science curricula as they are now organized are apt to emphasize facts at all levels. Some college history teaching is still merely the acquisition of battle dates. This is an entire violation of the best theory in the teaching of the social studies.

c. The social studies should contribute certain general values to the education of the individual. Lessons on history

[59] National Society for the Study of Education, *Yearbook* (Public School Publishing Company, 1933).

are pertinent, not only for students of military affairs and the like who may perhaps improve present-day technique on the basis of a scrutiny of past errors, but also for the teachers of citizenship and character. History furnishes as many examples of the follies of certain ways of human conduct as of the disasters attendant upon unsound military tactics. Social sciences may also join hands with foreign languages and other subjects which have as their special province the emphasis upon the common problems of the human race. While the student of the social studies is not expected to acquire a naïve trust in all people, a spirit of sophisticated internationalism may well be developed.

d. The social studies lend themselves to the newer psychological methods in teaching. The project, for instance, is easy to apply in the field of history.

e. From the standpoint of the psychology of learning there is one factor about the social studies which must be carefully observed. These studies tend to be diffuse. In mathematics the teacher of geometry has a relatively stabilized body of subject matter with which to deal and which it is necessary to impart. The same is true in languages. The two thousand most commonly used words in English, French, and German are about the same to-day as they were ten years ago or will be ten years from now. The scale of *C* upon the piano is the same to-day as it was ten years ago. The mixing of colors is the same, etc. In the social sciences, great and continuous flux is the rule. It may be said that history which is finished remains the same. To a certain extent this is true. But the history of to-day is as important as the history of yesterday and less easy to interpret. This continuous change and modification makes the social studies not simple to teach. It makes the problem of integration

interesting but subtle. It means that the teacher of social studies, to be at all psychologically sound in method, can never rest content with the acquisition of a given body of content but must continually augment, modify and reintegrate his own knowledge.

F. *Practical Arts*

1. Universal need for practical arts. There are persons who believe that an arbitrary line may be drawn between subjects which are "practical" and "cultural." These same individuals are likely to think that the school's particular task is to give cultural training and leave training in practical arts either to the home or to specialized commercial institutions. Although a consensus on any point of view could not likely be secured, the majority of educators probably believe that the practical arts have a real place in the school because of their unquestioned universal importance and the heterogeneity of results which occur when the home attempts all of this training. Regarding some of the discrete topics treated in the practical arts courses, it is possible to poke considerable fun at the curriculum in these subjects. No one denies that it is of advantage to shave without cutting oneself every day or to be able to drive a nail without pounding one's thumbs a bit. But that time and money in the school should be taken to teach these things is denied by many. Although a specious economic point is evident in this contention, the major fact to be considered is the importance of these practical arts when taken as a group. All subjects fare worse when criticized against an absolute scale than when rated on the basis of their comparative merits with other subjects. Some of the most crucial discoveries and fundamental possessions of the human race are preserved in the practical arts curriculum. Judd has made

this clear in his discussion of the use of tools as a human trait.[60]

2. Manual training. No one would be so bold as to contend that the manual training provisions in the schools to-day anywhere nearly approximate an ideal any more than in the case of any other subject. Manual training is too often interpreted in the narrow sense of ability to handle a few woodworking tools. It is easy to forget that the sculptor, the pianist, the painter, etc., are all in need of adequate manual training. There probably has never been a thoroughly adequate analysis of the manual processes involved in any skilled act. To be sure, there are photographic studies of handwriting, typewriting, forward-passing, etc. There are photographic studies of the positions of the hands of Walter Hagen as he reaches the top of the swing with a number two iron. But all of these are heterogeneous and unsystematic and are valuable in special cases only. There have been studies of the development of motor skills, such as those of Ragsdale,[61] but even these are as yet inadequate to serve as the foundation for a good program or curriculum in manual arts training. The place where attention should be concentrated at the present time in the field of manual arts is probably not as Snedden has suggested sometime since, the abandoning of manual training and the introduction of trade training, but rather a complete redefinition and expansion of the meaning of manual arts, the gathering of some fundamental data applicable to many fields on the subject and the construction of an entirely new type of curriculum for the development of manual motor skills.[62]

[60] *Op. cit.*, p. 285.

[61] Clarence E. Ragsdale, *Modern Psychologies and Education* (The Macmillan Company, 1932), p. 205.

[62] David Snedden, *The Problem of Vocational Education* (Houghton Mifflin Company, 1910).

It is proper to attempt to improve the curriculum in the woodworking arts, etc. It is quite satisfactory to better the curriculum in sewing. But there is still an enormous field for the scientific study of the nature of efficient manual performance. Even so elementary an effort as the photographing of the movements involved in bricklaying resulted in the elimination of many useless passes and the improvement of the act. The expansion of such efforts is the true psychological objective in manual training.

3. Home economics. According to the *Journal of Home Economics,* this subject now includes the teaching of fundamental data on nutrition, food selection and cooking technique; economics and hygiene of textiles, including sewing and dressmaking; and the comparative value of different types of goods and services along with household accounting; and the social psychology of home and family life in its optimum environment.[63] The same thing may be said about the field of home economics from the psychological standpoint as has been said about that of physical education without repeating each one of the subheads included under mental functions, namely, that home economics offers ample training in the various phases of mental development. This has been emphasized by Dodge and Henderson.[64] They list the following points of psychological significance in the organization of home economics teaching.

(a) Adequate organization
(b) Use of problem-solving method
(c) Employment of real life situations

[63] *Journal of Home Economics,* XXIV (1932), 401.

[64] Bernice Dodge and Ruth Henderson, "The Supervision of Home Economics" in *The Supervision of Secondary Subjects,* Willis L. Uhl, editor (D. Appleton and Company, 1929), p. 428.

(d) Correct use of the assignment
(e) Choice of activities on the basis of educational value
(f) Enthusiasm of the teacher.

In problem solving, for example, the curriculum in home economics is replete with opportunity. The problem of making both ends meet in a restricted budgetary allowance involves not only the cheap purchase of various foodstuffs but also the scientific dietetic information necessary to provide proper balance. This leaves entirely out of the question the psychological problem of getting one's husband or children or pupils to eat correct amounts of correct foods. The problem of preventing high school children from spending their lunch money on sweets instead of soup is a psychological problem for the lunch-room manager when the principal has charged her with the responsibility of seeing that the children eat correctly chosen food.

4. Commercial education. It is a somewhat ironical truth that many of the best practical applications of psychological facts are found, not among teachers, but among salesmen. The world of commerce is as much a psychological world and in some ways perhaps more so than any other. Webb and Morgan have given illustrations innumerable of the value of correct psychological techniques in commercial dealings.[65] It is not at all far-fetched to maintain that each phase of commercial education should be explained to the beginners in that field in high school or junior high school in elementary psychological terms. Office management is not merely a matter of keeping desks dusted, books in the correct place, and accounts balanced. It is also, as every office manager knows, sometimes to his sorrow, a problem in maintaining psychological

[65] Ewing T. Webb and John B. Morgan, *Strategy in Handling People* (Garden City Publishing Company, Inc., 1930).

equilibrium in a staff which is sometimes diverse and internally antagonistic. How often has it fallen upon the office manager in these times to break to his own particular group the news passed on to him from above of the twenty per cent cut. Doing this does not involve knowledge of the correct place to post item number forty-seven but a knowledge of people and how they will react.

5. *Specialized industrial arts.* In recent years there have grown up as adjuncts to the ordinary high school plant and organization, trade and vocational schools which aim to provide many sorts of special training, such as beauty culture. These schools have arisen in response to a specific and definite demand. There is a tendency on the part of those who favor a strongly cultural curriculum to frown upon them and maintain that they involve nothing valuable. As a matter of fact, psychology again must do its part and should be included in proper form in the training of those who teach the courses and those who take the courses. Take beauty culture which has been mentioned as an example. Two girls of about equal technical ability graduate from a beauty culture course and start out as operators. At the end of two years one has her own shop with fourteen girls working for her and the other is a complete failure. The difference between the two was psychological, not technical. The first girl understood people and how they act. The second did not.

G. *Fine Arts*

Art, as discussed here, embraces primarily the fine arts and music, which, despite their differences, have so much in common that they can be treated together. The principal issues in art study are creative activity and æsthetic experiencing

which were discussed at length in Chapter III. The present treatment may, therefore, be brief.

Every one agrees that few persons will ever create art that is recognized by others as significant. The creative pupil has a difficult problem. It is that of finding a solution or form of expression which will merge his experience in a satisfying manner. This requires a better command of the data of creative activity [66] than most pupils can acquire. It is possible, however, for almost every one to relive partially the art which the masters have created. This reliving takes two forms: (1) art may be enjoyed, as a painting is, by one who sees only a happy presentation of a familiar but interesting scene, or as music is by one who listens to it; or (2) art may be enjoyed by reproducing as well as can be the art of others. The first of these forms is closely analogous to literary enjoyment, and what has been said of that can, with a little modification, be applied here. This process is relatively simple, for it requires only the mood conducive to the abandonment of oneself to art, and elementary knowledge of standards and media of expression. Actual skill in performance of a technical sort is not necessary. The better the command over the data of art, however, the fuller the enjoyment of superior art may be. As in literature, the study of structure, history, and biography may be of value if it occurs incidentally and supplementarily and not as a substitute for æsthetic experiencing.

Enjoyment through reproducing art bears a different relationship to the fine arts than to music. Every one who has vision has the fundamental sensory equipment for enjoying a painting that comes within his range of vision, and the painting may need no mediating performer. Every one who has

[66] See p. 105.

auditory equipment, but who can not perform what the masters have given, must have a mediator to supply auditory stimuli. The act of reproducing either art or music is held to have an additional value, however, in its effect upon the one who reproduces it. This is probably due to the increased familiarity and personal interest which accompanies the reproduction. Skill is, therefore, significant, though not required, for the enjoyment of art.

Reverie is a frequent accompaniment of æsthetic experiencing. Although the exact nature of reverie and its relationship to art have not been fully explained, its existence is so common that it merits attention here. Many persons report that certain art experiences invariably lead to a recall of certain trains of thought. This response is probably due to earlier associations, as in the case of one who has a peculiar reverence for church hymns or other musical selections which have been experienced along with incidents that one likes to recall. Another form of reverie persists after an art experience as it may follow any other experience. Musical experiences are usually regarded as particularly persistent, so that a melody may "run through one's mind" time and again for hours after it has been heard. It has been said that early morning musical experiences are especially significant in this respect and that they should, therefore, be worthy of continuance through the day. If this is true, the musical reverie, or, one may say, the musical life of a person might be greatly improved by opening each day with fine music. The absence of scientific data on these points is unfortunate, but the frequent testimony about them is probably reliable enough to show their great importance in the art life of many persons. Psychiatric evidence about reverie can also be interpreted as indicating the prevalence of such activity

and the possibilities of its improvement.[67] A psychological explanation is suggested by Guthrie's statement that "the simplest acts involve the stimulation of multitudes of receptors, the neglected proprioceptors among others, and the activation of multitudes of cortical pathways." [68]

Art study involves the transfer of content, method, and attitudes or moods from an experience in one medium to one that is in another. Although transfer is probably carried to an extreme in art, the application of the principles of transfer to the correlation of the arts is especially important. This ability to see relationships may be objected to as undue stretching of experiences, but its value in æsthetic experiencing is generally conceded to aid the arts and other subjects, as literature and history, when it is encouraged.

The development of skill in art is subject to the same principles that apply to other motor situations. But skill in the arts has an additional value as mentioned above. It aids æsthetic experiencing. This is, of course, similar to the value of skill in oral reading as an aid to the experiencing of fine literature. It should be said, perhaps, that, while the skill of a virtuoso may be required by an audience for the æsthetic experiencing of a concert program, very slight skill may yield great value to the performer himself. If, therefore, the unskillful performer confines his efforts to restricted situations, his activities may be conducive to desirable results in art!

A further comment may be added about skill in school music. The ambitious programs of musical organizations in schools often lead pupils to overlook selections which they might perform well. Skill in music consists not only of striking

[67] *Cf.* Wilhelm Stekel, *Sadism and Masochism,* Vol. II (Horace Liveright, 1929), pp. 420f.

[68] Edwin R. Guthrie, "Conditioning as a Principle of Learning," *Psychological Review,* XXXVII, 412–428 (September, 1930).

notes but also of striking them correctly. If pupils are encouraged too early to attempt ensemble playing, they are in great danger of reaching a low plateau of skill and remaining there indefinitely. If that is desirable, there is no great problem; but many pupils might, by longer antecedent individual practice and drill, develop skill that would make their ensemble performances more satisfactory, and also enable them to progress indefinitely instead of arresting their development. Many pupils may gain, however, in social values sufficiently to justify their very amateurish, early ensemble playing. It is likely, for example, that the odd association of art and effeminacy may be reduced by giving a favorable social setting to music.

H. *Physical Education*

1. The psychological significance of physical education. Physical education is one of the most misunderstood and misused subjects in the entire curriculum. The tremendous development of competitive sports in the United States with heavy emphasis upon the winning team has in many places thrown the whole physical education program askew. At present, there is a hopeful indication that it is finding its way back into its true place in the educational program. This is an important place, for health education, which is one of the important sections of physical education, is a cardinal aim of education. The modern physical education program stresses neither bulging biceps nor winning teams as a major objective. The true aims are rather psychological and social in nature. Williams states a triple objective of physical education with the following major points:

(a) Development of innate mechanisms, especially the neuromuscular and organic systems.
(b) Development of thinking and judgment.
(c) Development of the understanding of social standards, values, attitudes, ideals, etc. [69]

Winslow and Williamson have stressed the point that health habits are formed according to the same principles of learning as any other habits.[70] The formation of health habits according to Winslow and Williamson calls for the three following psychological prerequisites:

(a) A clear notion in the child's mind of the habit which is to be built up
(b) Opportunity for practice of the habit
(c) Satisfaction in the habit.

It will be noted that these steps are in close accord with some of the principles of learning discussed in Chapter X.

To be regarded as psychologically significant, physical education must make a contribution or stand in some significant relationship to each of the six types of mental function which have been discussed in Chapter III. A brief statement of some of these relationships follows:

2. Physical education and problem solving. According to the organization of some of the older physical education programs which followed a rigidly systematized course in calisthenics, not much opportunity was offered for problem solving. In a flexible and well organized curriculum for physical education, problem solving occupies a prominent part. The problem need not be connected with the physiology or me-

[69] Jesse F. Williams, *The Principles of Physical Education* (W. B. Saunders Company, 1930), pp. 292–299.

[70] C. E. A. Winslow and P. B. Williamson, *The Laws of Health* (Charles E. Merrill Company, 1925–1926), p. 245.

chanics of the body. It may well be and frequently is a problem encountered in the normal execution of the physical education program. For example, in a certain small high school it was the desire of some of the boys to have a football team. One of the teachers was well qualified to coach, but no football field was available within miles. So the boys and their new coach started out to make a field. Before it was accomplished problem solving of the highest order had been necessary. Tools had to be secured, the field had to be surveyed, drainage had to be provided for, uprights had to be constructed, weeds had to be eradicated, etc. Before the apparently simple task of constructing a gridiron had been completed, the fields of mathematics, chemistry, geometry, mechanics, etc., had been called into service. The desire for the field provided the motivation. The problem solving provided articulation with many other types of subject matter apparently unrelated to physical education. In the execution of a physical act itself, it is easy to find many examples. Any one who has tried to lower his golf score from 110 to 80 knows that all the steps in problem solving are involved in the process. Analysis of errors, formation of a hypothesis as to a probable better execution, style of the new method are all involved. For many years Bobby Jones, thought by some to be the greatest golfer who has ever lived, has analyzed the problems of beginning and professional golfers in articles, motion pictures, and by excellent example.

It would be easy to multiply incidents illustrative of the opportunity in the field of physical education with many of its branches for problem solving activity. It may be correctly said that unless problem solving is included consciously in the physical education program it is a defective program. Nor need the problems be in the least artificial. Every branch of

athletics and every phase of the health education program offers opportunities for problem solving.

3. Physical education and the acquisition of knowledge. Present-day physical education programs do not confine themselves to narrow phases of mechanics and physiology. The modern teacher of physical education in the best schools has had a wide fundamental training. Consider for example, the following list of suggested topics for term papers taken from the syllabus used in one university.

"1. The Formal Program vs. the Natural Program.
"2. The Psychological Aspects of Method in Physical Education.
"3. The Worthy Use of Leisure as an Objective in Physical Education.
"4. The Meaning of Physical Education in Light of Modern Educational Theory.
"5. Biologic Significance of Man's Adjustment to Modern Environmental Conditions.
"6. The Relation of Physical Education to General Education.
"7. Interest and Effort in Physical Education.
"8. The Relation of Exercise to Health.
"9. Development of Leadership through Physical Education.
"10. The Social Significance of Play and Games.
"11. Factors That Have Retarded Growth in the Field of Physical Education.
"12. A Comparative Study of Different Systems.
"13. Influence of Leaders at Different Periods of World History.
"14. A Code of Professional Ethics for Physical Educators.
"15. The Problem of Teacher Training.
"16. Military Training as a Substitute for Physical Education.
"17. Influence of Foreign Systems on Practice in the United States.
"18. Safety Education through Physical Education.
"19. Development of Social Controls through Athletic Sports.
"20. The Transfer Value of Physical Education.
"21. Economic Forces Influencing the Trend of Physical Education.
"22. Subject Matter and Educative Process.
"23. The Value of Good Posture.

"24. The Desirability of Interschool Athletics for High School Boys.
"25. The Validity of Certain Tests for the Purpose of Classifying Children.
"26. Self-expression Through Physical Education.
"27. Legislation Affecting Physical Education in Secondary Schools.
"28. Unethical Practices in the Field.
"29. Principles Underlying Curriculum Construction.
"30. Physical Defects as Revealed by Certain Studies and the Significance to Physical Education.
"31. Adapting the Work to the Individual's Needs.
"32. Physical Education as a Training for Military Preparedness.
"33. The Olympic Games: Values and Evaluations.
"34. The Obligation of the State for the Physical Education of Its Members.
"35. Modern Terminology.
"36. A Discussion of Physical Education in Light of the Cardinal Principles.
"37. Criteria for Judging Physical Education Practice.
"38. Significance of the Carnegie Report on College Athletics.
"39. Physical Education and Emotional Stability.
"40. Application of Current Educational Methods to Physical Education.
"41. Awards and Incentives.
"42. Psychological Guides in Motor Learning.
"43. Current Movements in Physical Education.
"44. A Survey of the Class with Reference to Habits and Skills in Physical Education.
"45. A Critical Analysis of the Various Theories of Play." [71]

It may be seen from the above list of topics that the correlative and related knowledges which are offered in the physical education program at the present time are both broad and cultural. The same is true of the high school pupil of physical education. High school pupils can easily be interested if properly approached in the history of physical edu-

[71] Henry M. Foster, *A Syllabus in the Principles of Physical Education* (University of Washington Book Store, 1930), pp. 21–22.

cation, as, for example, the types of games played by the Greeks and Romans. They can be interested also through the physical education activities of other countries of the world. All such types of interest result in information which, when correctly systematized, makes a worth-while acquisition in the realm of knowledge.

4. Physical education and the acquisition of skills. Little need be said on this point, for the acquisition of skills has always been the major aim in the field of physical education. It is entirely sound to continue this stress. It may be noted that physical skills may include far more than skill in the better known athletic sports. Posture as an item of social importance comes under the heading of the acquisition of skill. The ultimate objective is, of course, the development of skilled balance in all activities, including those not comprised in the formal branches of athletic pursuits.

5. Physical education and social competence. Much has been said by football coaches about the values of the athletic branches of physical education in the development of social values, especially character. Unfortunately, these values are too often confined to the after-dinner speeches of the aforesaid coaches. The reason for this is that the values are forgotten except when athletics need justification. It is entirely possible to make physical education a thoroughgoing contributor to the development of social competence. Take social sophistication or social insight, for instance. Insight, it has been said, is probably no mysterious psychic force but simply the habit of attention to minute detail with inferences as to what minimal performances indicate. This is important in athletics. One of the greatest quarterbacks in the history of football competition in the United States was noted not for his great strength or his ability to block, pass, or run, but for

his ability to diagnose plays of the opposing team. He did not do this by buying the team's signals or any other of the moving picture devices, but by close attention to the opposing team as a social group. He paid particular attention to the idiosyncrasies of the individual players. Only a mediocre technical performer, it was always worth while to have him on the field, because it is of very little value to a team to know the opponents play before it even starts. This quarterback had a certain form of social competence, some phases of which would probably transfer into drawing room conduct. In both competitive and play games, social tension sometimes runs high. Plenty of opportunity is afforded for the development of habits of inhibition, poise, etc. Team play, coöperative group activity, and other forms of social competence transfer into later life conduct.

6. Physical education and creative activity. Physical education is a tremendously fertile field for creative activity. The thing that often prevents this is the teacher. Whereas the dances of some primitive peoples are highly stereotyped and indicate the creation only of the originator, the modern theory is to encourage freedom in creative dancing. The football field offers an opportunity for originality that is related to creative activity. Many situations arise in which stereotyped plays are questionable. Teams often originate their own plays. This is all the development of psychological values, and it is simple. The only thing the teacher needs to bear in mind is to provide the opportunity and direct the lines of activity.

7. Physical education and æsthetic attitudes. In general this objective is not striven for as assiduously to-day as was the case in the days of the Greeks. Even at that there is much attention to the æsthetic phases of athletics. Form and execution are æsthetic factors in physical education. Appreciation,

even of a fairly rugged physical performance, has an æsthetic tinge. As frequently elsewhere, the creative and æsthetic phases go hand in hand.

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PART IV

PSYCHOLOGY OF CONDUCT

CHAPTER XII

NORMAL CONDUCT

The Concept of Normal Conduct

When Thomas Edison informed one of his scientific collaborators that there were no rules in his laboratory, but that every one was trying to accomplish something,[1] he was announcing the fact that his laboratory was a hospitable place for normal conduct. When a school provides that happy blend of freedom and discipline which keeps discipline out of sight, it becomes also a place where normal conduct can thrive. In such situations, human beings, regardless of age, engage in progressive conduct. For such conditions provide each individual with incentives for advancement, and advancement depends upon personal effort and self discipline. If these incentives are sufficiently powerful, each individual's efforts will be commensurate with his physical and intellectual equipment.

Genius can flourish, as Beethoven in his childhood, under other conditions, Even with genius, these other conditions appear, however, to thwart rather than foster normal conduct. Beethoven as a child was never more diligent than when his own powerful incentives, and not those of his father and his master, were driving him. When, for example, he secretly acquired and practiced music, which had been forbidden to

[1] M. A. Rosanoff, "Edison in His Laboratory," *Harper's Magazine,* CLXV, 402–417 (September, 1932).

him, he seems to have discovered for himself and others talents that had been unawakened by an over-disciplinary regimen. Another genius, Humboldt, seems never to have had a disciplinarian as a teacher. Edison, equally contemptuous of well-disciplined schools and genius without hard work, flourished, so he thought, because he had no master. Others, as Whistler, the painter, and, perhaps, Edison himself, might have reached greater heights with a better balance of freedom and discipline. Even though genius can develop when discipline is strong and imposed by others, evidence is not lacking to show that the best efforts of the gifted are put forth when they have freedom to follow their own incentives. How many gifted persons have been thwarted, temporarily or permanently, can only be surmised. One can profitably contemplate the possibility of normal conduct in Robert Louis Stevenson as an engineering student or Francis Thompson as a student of medicine. Progressive conduct for the over-disciplined, gifted person seems probable only when the disciplinarians urge forward the type of activity which would proceed even better with fuller self direction.

Furthermore, progressive conduct is inconsistent to the conventional person. Progress takes place when one succeeds in doing a useful thing which, to well-disciplined persons, was impossible. After the thing has been accomplished, the whole affair is obviously normal. This means not that all conventional conduct is useless, but that it serves only to keep people straight until some one finds a better form of conduct, which, in turn, often becomes conventional. This applies to individuals as well as to the race: habits are valuable only as they help persons to do what should be done. When old habits or old knowledge are superseded, new habits and new knowl-

edge are adopted. In both the individual and the race, there is need for discipline and freedom to find the new.

Experimentation, then, is an attribute of normal conduct. But true experimentation requires both freedom and discipline. When Rosanoff was assigned the task of discovering a suitable wax for phonograph cylinders in a laboratory where there were no rules, he had great freedom, but he was under strict discipline—he was expected to accomplish something.[2] There was freedom to try anything from soap to radium, anything that scientists might think likely and everything else. The laboratory procedure was to try until something was found. If Limburger cheese was a good ingredient for lamp filaments, there was no reason why anything under the sun should be scorned for cylinder wax. Freedom from the theoretical notions of a mature, unchanging mind was necessary at all costs. So much for the freedom to work. Discipline entered by a side door. Something had to be done, and, after months of exhausting failure, Edison cordially entered into a pact not to sleep until the wax was found. Even this disciplinary measure failed—Edison was the first to break the pact. Rosanoff continued long in his vain search. Time after time, he drove himself under the leadership of Edison, who was relieved when all reasonable things had been tried. Then, after "having learned to *think* waxes," the desired cylinder was produced in fifteen minutes, by what Edison maliciously called "*theo*-retical chemistry"! So much for the discipline which made freedom possible.

Rosanoff's experimentation exhibits exactly the kind of normal conduct that is found whenever man lives where freedom and discipline are balanced. It shows man at his best in

[2] *Op. cit.*

a situation where he may do as he pleases, except that he has the grave responsibility of justifying his continued existence. He can not dodge, for he knows that accomplishment is necessary. He has all possible freedom, save to shirk his responsibility. This is not merely ideal conduct; it is, instead, actual conduct for the person who lives up to his own self respect. It is perfect conduct in the sense described in Chapter VIII.

Experimentation with life incurs the gravest responsibility for the individual. Not every one can experiment with all kinds of life situations any more than a tyro could have been employed by Edison to produce improved cylinders. Most persons are, for example, utterly incompetent to improve upon most social conventions, just as they are incompetent to improve an economic system or an industrial order. One may rebel against the authority of custom, but only he who thoroughly equips himself for experimentation can be trusted by others to reach an improved basis of conduct. Only such a person can respect his own attempts at improvement or trust his own fortunes in the attempt. Normal conduct requires the appraisal of each new situation in terms of the experience of the race, present conditions, and probable outcome. It requires, therefore, the discipline of life for each level of experimental living. Appropriate degrees of freedom, incentives for action, and willingness to undergo self discipline are the safeguards and necessaries of experimental living just as they are in the scientific laboratory. Normal conduct is consistent conduct, so far as it consists of an active search for the good; it is inconsistent with conventions and yet defensible when a person acquires competence to abandon old controls which others have been either incompetent or unwilling to challenge. The question is not one of consistency or inconsistency or of conformity or nonconformity. The question is, as Munson

says, about the quality of performance either within or without the pale of convention.[3] The place of rigorous schooling for children, youth, and adults in such a program of normal, experimental conduct is obvious.

How different this conduct is from the dodging, vacillating, irresponsible activity of one who takes or is given freedom without discipline is patent to every one. Such a person, young or old, does that which neither his normal self nor his observers can respect. His actions are in no true sense normal human conduct, for the very good reason that he accomplishes nothing. How different also this conduct is from the fawning, perfunctory, restricted activity of one who has no freedom is equally patent. Such a person knows himself as a pawn and waster and can not accord respect to himself. His actions are not normal, for he, too, accomplishes nothing, or, at any rate, but a fraction of what his normal self could do.

The concept of normal conduct just described places responsibility upon the individual. Without a proper balance of freedom and discipline, the individual can not engage in certain levels of conduct. The individual who is charged with heavy responsibility, and who has not already raised himself to the level of performance required for that responsibility, can no more engage in appropriate conduct than a pedestrian bridge can bear the strain of automobiles and heavy trucks. The point of reference for conduct changes then from the individual to the purpose and demands which follow heavy responsibility. Conduct in a situation which is inappropriate for the individual may be as good as he can make it, but it may be ruinous in this situation. A general student of chemistry may be conscientious and eager to serve himself and

[3] Gorham Munson, *The Dilemma of the Liberated* (Coward-McCann, 1930), p. 46.

others, but only the disciplined, exacting pharmacist can be trusted with the duties of an apothecary. Normal conduct then consists of following one of these alternatives: first, preparation of the individual for appropriate conduct in his situations; or, second, delegation of the serious responsibility to some one who can act appropriately. In either case preparatory conduct—instruction, deliberation, and practice—is necessary. As increasing responsibility is a function of human living, normal conduct requires the discipline of preparation for higher and higher levels of performance. The work of schools is preëminently that of providing opportunities for this progressive conduct which projects itself beyond the school task to activities required in the future. This is by no means an admission that school life is not real life with its freedom and discipline; it is, instead, an assertion that school life is like all other normal conduct in its requirement of progressive activity toward improved living.[4]

The term "normal," as applied to conduct is relative and implies the distribution of measured behavior. In connection with the concept of normal conduct as the perfect conduct of any one who lives up to his own self respect, there is, therefore, the statistical aspect of normality. This aspect is based upon the accomplishments of different persons or of the same person at different times. It is often stated in terms of medians and averages, although the extremes of conduct—the range—would, in many cases be more significant. When stated in terms of the median performance of a group, a norm is the score of mediocrity and not a goal for the dullest or brightest member of a group. It is, however, a possible

[4] *Cf.* A. N. Whitehead, *The Aims of Education and Other Essays* (The Macmillan Company, 1929), Chapter III.

goal for a group selected as nearly at random as the group from which the median was derived. To achieve this norm in a group, the brightest must exert themselves to offset the low scores of the dullest, just as the best stretches of a highway must be taken at a high speed to offset the more tedious stretches, if a high average is held for a day's journey. For an individual, therefore, the score of another equally competent performer is a better norm than that of a group, except that, in actual cases, it is fraught with many possible inaccuracies of measurement. Another important norm for an individual is his own earlier record. This has two advantages over the score of another equally competent person: it eliminates the necessity of matching the abilities of different persons, as mentioned in Chapter IV, and it provides a superior motivation. The deficiency in the statistical matching of abilities is due largely to deficiencies of present-day measurement. Whenever accurate measures are found for appraising a person's total equipment, the conditions under which his conduct takes place, and the products of his behavior, these deficiencies will be removed. Although important steps have been made in appraising such mental functions as social competence and problem solving, most statistical measures of conduct are confined to the measurement of the amounts of formal knowledge or skill possessed by an individual.

For the evaluation of functions that are less well measured statistically, verbal descriptions of behavior are often combined with the results of batteries of tests and school achievement records. Verbal descriptions, when based upon standardized conditions, can be treated objectively by statistical devices, and their validity and reliability are then increased. The practical application of judgments of an individual's con-

duct shows advantages and disadvantages of the exclusive use of either statistical norms or less objective, verbal description norms.

The statistical norm, when adequately established, is always derived from actual conditions. This norm represents a measured, and, therefore, known, possibility. As a group norm, however, it has the disadvantage of being inappropriate for almost every individual. This norm, based as it must be upon past performances with standard materials, tends also to stereotyped or static norms, rather than to norms which progress with changing conditions. The verbal description norm provides flexible and continuously advancing goals adaptable to the individual, and, within the limits of the somewhat undefined balance of freedom and discipline, it allows departures from the stereotyped responses of routine conduct. This norm, though highly subjective, because seldom based upon controlled measurement, probably presents a valuable challenge to the individual who is intelligently critical of himself, who is driven by strong incentives—the incentives being supplied by himself or by others, and who is placed in a situation where true experimentation with life can and should take place. As no individual's entire life should be routinized, it is of especial importance in the training of every one for those parts of life in which variations may properly occur, even though it be impractical in the highly routinized activities of mechanized work. Normal conduct is an individual affair dependent upon individual equipment and conditions; norms are, therefore, changing rather than fixed. The best conduct for each individual often requires a detailed appraisal of his situation, rather than merely a comparison with a fixed norm derived from the performance of some one else under other conditions. Norms are necessary in this appraisal, and both

forms should be used with due regard to their respective limitations and advantages.

In concluding this section, it must be said that the foregoing account of normal conduct as the individual's best conduct is not mere perfectionist counsel for an ideal world. It is a description of the conduct that exists in any school in which teachers and pupils work coöperatively to accomplish something. Not all schools meet this condition. All schools are not staffed with teachers who have insight and resourcefulness. Many classrooms are filled with pupils who require nothing short of a genius to lead them to coöperate wholeheartedly in intellectual affairs. When neither teacher nor pupils are willing to work together, progressive conduct is the dream of visionaries. If the teacher desires pupil coöperation, but knows not how to foster it, progressive conduct is still a remote probability for most pupils. When the criteria of teacher selection named in Chapter VII have been met, the teacher himself must be allowed to adjust the freedom and discipline of the classroom. Incorrigible pupils have often been placed with equally incorrigible teachers, and under such conditions one finds progressive delinquency. The first step in the development of progressive or normal conduct is the selection of the right teacher for the pupils who are to develop. The next step is to allow this teacher freedom to find procedures that will stimulate the desired conduct. The balance of freedom and discipline in his classroom may require that discipline be emphasized, but such a teacher will know the kind of discipline to use to stimulate the effective use of whatever freedom the pupils can profitably have.

There must be a balance of freedom and discipline, but, as stated above, always with reference to the total situation—teacher, pupils, and the curriculum. When a teacher named

Henessey inspired a pupil by petty annoyances to call her "old hen's eggy," she required the pupil to write a moral precept fifty times after school. To her, that was discipline. To the boy, it was a cause for further revolt which ensued on the following day. As long as American teachers assume that unfit discipline will produce normal conduct, a visionary ideal will exist. As punishment must fit the crime, so all discipline must fit the pupil. When a teacher suddenly released his over-disciplined and wrongly disciplined pupils from "all rules," five pupils remained on the playground all day, while those inside the schoolroom also had an uproarious celebration. This was unfit freedom for those pupils. Freedom as well as discipline must fit the pupil.

Categories of Normality

Exact and rigid classifications of normality are impossible, because valid and reliable measurements do not, at present, exist for all conduct situations. Standards are, however, employed for judging conduct, and the value of these standards depends upon the validity and reliability of the standards themselves and of the use which is made of them in forming judgments. As indicated above, verbal descriptions only are available in judging certain aspects of conduct, while more exact devices exist for other judgments.

In actual situations, conduct is judged from different points of view, and, therefore, a system which provides appropriate categories of normality may clarify both the planning and the judging of conduct. Like the classification of all conduct into six types in Chapter III, the classification of normality into four categories is open to the criticism that these divisions also are not mutually exclusive. The names of these cate-

gories result from the aspect of a situation which is stressed in a judgment or analysis of it. As normality refers to both overt and covert action, any practical system of categories must find a place for both types of action. With this introductory explanation, the categories are presented as the socio-individualistic, the psychological, the legal, and the ethical.

1. *The socio-individualistic category.* All conduct is two-sided: it has significance, as indicated in Chapter V, for society and for the individual who is acting. Analyses and judgments of conduct are primarily either social or individual, as attention is directed now to other persons and social institutions and then to the person whose conduct is considered. Courtesy in business affairs has both aspects. From the point of view of business institutions, courtesy may be more important for the person or persons to whom it is shown than for the individual who extends the courtesy. From the point of view of the individual, there may be reasons for thinking of the courtesy as his own affair—a means of self aggrandizement through remunerative graciousness, or a means to self degradation through hypocritical servility. Excepting rare cases like that of Cincinnatus, most political conduct is also socio-individualistic. Much time is spent by critics of political conduct who try to find out what is done for society and what for the individual. Everyday life, particularly speech, perhaps, contains many similar examples. All conventions of conduct, as turning to the right when meeting other persons, are primarily social, but these conventions, as followed or modified, have obvious individualistic characteristics. The point of reference, when the social aspect of conduct is judged, is primarily outside the agent, and, when the individualistic aspect is judged, it is primarily with the agent. Consequently, norms for conduct of this category are either in terms of so-

ciety's or of the individual's welfare and are fundamentally qualitative.

2. The psychological category. The foundation of psychological normality is quantitative. It is concerned with the sufficiency of a given response for a given stimulus. It is primarily individualistic and dependent upon each person's equipment to react to various stimuli, social and otherwise. An individual responds fully, moderately, or not at all to a stimulus, and his personal quantitative norm is said to be high, fair, or subnormal in that situation. Qualitatively, a fair response might be as good as a full response, but this judgment of quality would fall into the preceding category. Keenness and dullness are terms which fall into the psychological category, although the situation in which they are applied may belong to conduct which is being judged also in another category. If one pupil fails to learn the product of six times nine as rapidly as most pupils do, he is judged by a norm of the psychological category, and rated as below normal with reference to a group. In terms of the socio-individualistic category, however, he may be normal, for he may be using his slender equipment effectively: his equipment, not his use of it, may be below normal.

Here lies the basis for an important point discussed in the preceding section—the need for judging conduct with reference to each individual's norms as well as with reference to group norms. As an institution for promoting progressive conduct, the school attempts, within this category, to adapt the gradients of progress to each pupil. According to his psychological equipment, the gradient may be steep or nearly flat; the individual's norm will be the index. The point of reference for psychological normality may be either a group norm

or the individual's own norm of conduct under given conditions.

As an individual's use of his equipment is dependent upon the balance of forces, internal and external, which affect him, he may be emotionally weak or strong, or he may be under- or over-stimulated by his environment. If he is emotionally weak, he needs unusually strong stimuli; if emotionally too strong in any direction, he needs substitute interests with their secondary motivating power as already discussed in Chapter IV.

3. The legal category. Where legal provisions actually represent the consensus of a group, this category coincides closely with the socio-individualistic. It then becomes a codification of working principles, and it provides standards by which conduct can be judged. As burglary is specifically forbidden, conduct is abnormal legally when burglary is practiced. In this case, conduct is also clearly unsocial as far as the consensus of citizens is concerned. The normal person abides by the law against burglary and helps to enforce it. The legal definition of normality admits of apparent exceptions, many of which are due to the impracticality of "unwise" legislation. The strictness or liberality of interpreting laws and situations which fall under them leads, therefore, to varying definitions of legal normality. As no one obeys or attempts to obey all laws, since laws are in some cases retained, though actually superseded by other laws, no one is, by strict definition, normal in a legal sense. Certain laws are social in one sense and unsocial in another. Immigration laws, as examples, may be social from the point of view of certain groups of laborers, but, in application, highly unsocial to other persons.

As respect for sound legislation is essential in citizens, the school should encourage a critical, constructive attitude toward legal normality. Such normality is by no means a blind acceptance of all legislation. If it were, the interpretations of a Supreme Court would be unnecessary. Particularly would the work of Chief Justice Marshall have been abnormal. Normal legal conduct precludes equally the flouting of laws and a failure to regard legislation constructively with a view to its betterment.

The point of reference in the application of this category is the law or rule as interpreted and as established by precedent. Unfortunately, not all persons can apply this point of reference successfully, although all citizens are asked to do so when they compel legislation by the initiative and when certain crucial situations arise suddenly in their own conduct of affairs. If the psychological limitations of a pupil will not permit him to understand situations involving new legislation, he might well be advised to entrust such responsibilities to others. If he can not interpret laws or have them interpreted, he should be instructed about the requirements for his principal duties and advised to follow established codes of action. If he is intelligent and constructive, he should be urged to adopt the "faith of our fathers" and elevate the point of reference for legal normality. The school has few responsibilities greater than those involved in the consideration of normality of this category.

4. The ethical category. If all evil actions are sinful solely because of their social consequences, and if all sins were prohibited by law, the sociological, legal, and ethical categories would coincide. If, as commonly conceded, evil actions reduce the individual agent's social value, the distinction between

sociological and ethical norms is reduced if not eliminated. If worthy religious motives prompt ethical conduct, and if ethical conduct always has social as well as individual significance, the relation between sociological and ethical norms is still closer. While analyses of actual situations seem to bring these norms more closely together, analyses of ethico-legal situations seem to separate more distinctly the ethical from the legal. This apparent separation is due in part to the concept of law as indicating courses of action in most cases rather than in all cases. By ethical standards, a physician would, perhaps, be allowed to exceed legal speed limits in his endeavor to reach a patient's bedside; indeed, he might be condemned by the majority if he did not do so. A bearer of illicit goods would, by both ethical and legal standards, be condemned for driving at all, and he could expect no mercy, if convicted of undue haste in driving to his customer. Ethical norms are more flexible than legal norms, and can be based upon the totality of circumstances in which conduct takes place. The values which lead to the adoption of ethical norms are experiential. Many of these norms are standardized through association with such stabilizing institutions as the home, church, nation, and so on. When so standardized the point of reference is similar to that of the legal norm. When not so standardized the point of reference is the best working principle that can be evolved for a given situation. In the development of such principles, the school can aid pupils in judging the values concerned in the formulating of such a working principle.[5]

[5] *Cf.* John Dewey, *The Quest for Certainty* (Minton, Balch and Company, 1929), p. 265.

Standards of Normality

In each of the categories of normality, standards have been developed. These standards are based upon the acceptance of certain values. All these values have the same double aspects as those of the socio-individualistic category: they affect both society and the individual, although they may contribute primarily to the welfare of either society or the individual. As the welfare of society is not always apparently the same as the welfare of the individual, the values which underlie standards are sometimes in opposition to one another. The welfare of a laborer is, for example, apparently only in part the same as the welfare of the stockholders of the company by which he is employed. In an organization in which the adjustment of wages and dividends is exactly just, however, the laborer's welfare would be just the same in this respect as that of the stockholders. Again, sectional and national groups have different forms of welfare. The sectional welfare of different parts of the United States leads to controversies about the tariff, and the national welfare of different nations leads to similar controversies among nations. When national consciousness is developed, sectional differences usually diminish, as national differences diminish when international consciousness develops. In all the instances just cited, differences in notions of welfare exist, because few business organizations, sections, and nations have adjusted their standards of value on a social basis which includes every one concerned. This disparity in economic standards of welfare is paralleled in other standards. Every one tends, justifiably perhaps, to think, first, of himself; then, of his section; then, of his nation; and last, of every one else. The complete merging of self, section, nation, and the world seldom or never occurs.

The perspective of such a merging is an extension of sympathy which is probably attainable by few persons. As values are dependent upon the satisfaction of desires, standards of value must vary, and they often conflict.

The development of standards of conduct is fundamentally the same in all categories of normality and, of course, in all the six types of conduct. In the first place, one acts because one is motivated by some kind of desire. In each person, desire changes as the individual develops. The earliest desires are egoistic, and conduct is, therefore, primarily individualistic as well as juvenile. Later, good things are found to come by way of other persons and objects. The child's desires then include certain "good" aspects of those other persons and things, for values are attached to whatever the desires dictate. Along with this extension of values comes a refinement or tempering of desires, because certain desires are found to be safe prompters to action, while other desires are unsafe. There is then a weighing of the values which accompany or follow different kinds of conduct. Past experiences aid in determining the principle of conduct and the direction which conduct should take. As the range of conduct is extended either directly or vicariously, desires and their accompanying values are extended. More persons and more objects come to have significance for the individual. This extension of values continues through life.

The extension of desires and values to a wider range of conditions is not necessarily conducive to either social or individual welfare. Instead, the individual's ability to weigh values with greater and greater care will determine his effectiveness to himself and others. Furthermore, his experiences must be such as to lead him to consider certain values as more important than others. The values which Fagan led Oliver

Twist to consider are, for example, not those which are conducive to welfare unless one condones the pickpocket. Just why the extension of the pickpocket's activities to a greater number of victims is a mark of less and less effective conduct is that such activities promote a form of discord upon which nearly all persons frown. The disavowal of the pickpocket is due, however, not solely to the fact that stealing is always and everywhere wrong, for, according to the standards of many peoples, it is not wrong. Occidental peoples have disagreed with certain Oriental tribesmen on this point, and, as a consequence, the results of this form of appropriating the property of others are not regarded by western or by most eastern peoples as values to society or the individual.

As every one is reared in a social group, the values of that group acquire especial significance for each individual of the group. The conduct which follows the adoption of certain values may take various forms in different groups. Reverence for the building in which people live leads, for example, to some form of reverential conduct. This conduct ranges from the uncovering of the head to the uncovering of the feet or neither, depending upon the sex and nationality of the person. Reverence being the main consideration, there is fundamentally no reason why sandals rather than hats should be removed upon entrance to a building. Therefore, no distinction except nonconformity is achieved by a refusal to adopt the custom of one's group. If, however, a customary practice, such as binding the feet or the ribs, interferes with the individual and does not aid the group, a new type of distinction can be achieved by such a refusal. As soon as a more appropriate form of conduct is discovered and after it has been adopted by the "right people," the new standard becomes the touchstone of propriety. There is then greater value in

nonconformity with the old standard than in conformity with it, and the "normal" person follows the new standard.

Between the régime of the old and that of the new, there is often a difficult transitional period, during which the adherents of the new either suffer or enjoy the reputation of extremists. The custom of cropping the locks of women passed through such a period. The greater the tendency of the "wrong" people only to adopt the new, the more difficult a transitional period becomes. In all cases, the follower of old customs is more likely than the innovator to be regarded uncritically as normal. When examined critically, however, an innovation may have no significance except that which inheres in all nonconformity, or it may have great significance in facilitating the attainment of accepted values. If, then, normal conduct is defined as the best means for the attainment of values, nonconformity may be normal whenever progress toward an assumed value is facilitated by such nonconformity.

Schools tend to develop conformity in pupils. Teachers, like other persons, have adopted standards of conduct, and, having adopted these standards, regard them as superior to other standards. Proverbially, and perhaps actually, teachers are provincial; for that matter, most other persons are, too. They regard the adoption of new patterns of conduct as conducive to all such misunderstandings as those which arise when peoples of different nations meet. The teachers themselves are annoyed by these new patterns of conduct and by tendencies which suggest individual independence of pupils.[6] But the requirements of normal progressive conduct necessitate departures from customary standards of conduct. How

[6] See pp. 198–201 for Wickman's evidence on this point.

can teachers change this condition without encouraging departures from standards that are still good?

A means for dealing with conformity and innovations has been suggested by Thomas.[7] He classifies individuals roughly into three types:[8] first, the philistine, who accepts standards as they are, even at the expense of individuality and new experience; second, the bohemian, who rebels against standards, even at the expense of his own security and possible influence; third, the creative man, who redefines situations and originates superior, new standards. Of these types, the creative man will be conceded the greatest merit. The adaptation of his procedure to that of the school is, therefore, desirable.

By extending Thomas's suggestion, one obtains a criterion for judging the validity of standards of conduct for an individual. The philistine attitude can properly be encouraged in matters which can be done more effectively in the customary way than otherwise. If the pupil is unpromising or if data leading toward improvement of customary conduct are wanting, there is usually no reason for departing from customary standards of conduct. If danger of any kind is likely to follow nonconformity and if effectiveness is known to follow conformity, the philistine attitude is correct in a given case. If, for example, a dull pupil discovers a clumsy method for adding in arithmetic, he needs to be shown the advantages of the more effective customary method.[9] Or, if a pupil uses "like" for "as if" and says, "It looks like it will rain," he

[7] Herbert S. Jennings, John B. Watson, Adolf Meyer, and William I. Thomas, *Suggestions of Modern Science Concerning Education* (The Macmillan Company, 1920), pp. 159–197.

[8] *Ibid.*, pp. 178–182.

[9] W. L. Uhl, "The Use of Standardized Materials in Arithmetic for Diagnosing Pupils' Methods of Work," *Elementary School Journal*, Vol. XVIII, No. 3, November, 1917, pp. 215–218.

needs to be shown the social disadvantages of ready acceptance of an expression, which, unfortunately, creeps into the discourse of many teachers.[10]

The bohemian attitude often leads to a satisfying release from the fetters of customary practice and, in certain people at certain times and places, is probably desirable. Much of the "horseplay" of boys' clubs is recognized by the boys as impractical for general adoption, but moderate indulgence is usually harmless and pleasurable to them. For an adolescent or adult male to adopt a Windsor tie for everyday wear is, however, another matter—one which places him under general suspicion, just as certainly as if he were to break down customary standards of morality by theft. Yet, one must remember that Oscar Wilde and many other important contributors to human life were bohemians. Instead of having a general rule against all rebellious bohemianism, one should find a place for promising ventures in nonconformity, again considering the conditions in the light of the best available evidence, in a search for the best principle of action. Underlying the nonconformity, one may find, as Hergesheimer did in the young Persian girl, certain standards of conduct which are as good as one's own.[11]

The attitude of Thomas's man of originality admits of philistinism in both nonessential and essential matters, but it provides also for variations in standards, when, after due consideration, one finds that variations are likely to increase satisfaction. The person who is original may be or appear to be bohemian in attitude or action. Essentially, however, he is not merely a philistine follower or a bohemian rebel. In-

[10] S. A. Leonard and H. Y. Moffett, "Current Definitions of Levels in English Usage," *English Journal,* XVI, 345–359 (May, 1927).

[11] Joseph Hergesheimer, *Berlin* (Alfred A. Knopf, 1932), pp. 227–232.

stead, he faces the problems of his life critically and, finding problems, attempts to find better solutions than those represented by customary standards of conduct. More often than not, he is thwarted by other persons or by his own incapacity or by both. He is, at any rate, an experimentalist. He is serious and diligent in his adaptation of his own equipment and the findings of others and in the evaluation of the products of his own efforts. To say that such a person is rare and that teachers should devote all their attention to the cultivation of philistine conformity is to say, in effect, that potentially original pupils ought not to attend schools. To say that such a person should be given complete freedom is to admit that original pupils can discover the world for themselves. Neither of these assumptions is true. Few persons can be significantly original in all things, but many can be in a few things. Important originality can often be found, if one encourages it. Jacobsen found, as an example, that, when he entered into a teacher-pupil partnership with his engineering students, these students solved problems which have baffled experienced radio engineers for years.[12] Accompanying this study, Jacobsen found a boy who had developed the "abnormal" trait of appropriating radio apparatus for his own experiments and who offered openly to do the same for the experiments of the group. This boy's misguided conduct showed the need for the teacher's counsel, as his earlier experimentation showed the need for the counsel of the entire group. While no one can maintain that all originality is significant, no one can maintain that originality of some sort is infrequent when opportunity for it is given. It may, indeed, be of great individual-

[12] P. A. Jacobsen, "Teacher-Pupil Partnership as a Means for Developing Significant Originality," unpublished study conducted at the University of Washington, 1932.

istic significance in all cases, and of great importance to society also in certain cases.[13]

If all teachers and pupils were automatons or if they should be, general rules could be formulated to cover all conduct situations. One after another, the standardized patterns of conduct could then be mastered unquestioningly. But all possible patterns of conduct have not yet been tried in all situations, and the best pattern for given conditions may yet be undiscovered. This is true of all categories of conduct and of all school curricula and methods. Normal conduct is, therefore, a potentially progressive affair with respect even to its own norms or standards. School curricula represent, at best, data for the discovery of progressively better conduct, and the activities of pupils give practice in such conduct. These curricula combined with extraschool data and activities, which, at best, serve the same educative purpose, give the total guidance that every one has from the experience of the race. All these materials and activities represent standards of conduct. As conflicting standards are found within this mass of experimental data and activities, problems of conduct, with respect to standards, must arise. The best that can be done is to weigh available evidence and select or devise what seem to be appropriate standards as principles of action. In most cases, perhaps, conflicts of standards do not arise as serious problems. The best that can be done when no conflicts occur is to devise more or less artificial problem situations to aid pupils in adopting impressively the standards which are already formulated and with which they should conform intelligently.

[13] For numerous instances of the encouragement of originality see such articles as that of Jennie Harmel Cohen, "The Backward Child and the Activity Program," *Educational Method,* XI, 550–552 (June, 1932). Also in *Progressive Education,* VIII (December, 1931).

An attempt has just been made to show why standards of conduct must be, in part, definite and, in part, indefinite. Standards can be only as definite as progressive living. Any one who deals with human beings, as teacher or in any other capacity, must carefully avoid standardized definiteness in certain matters. One who can not do so should deal only with the aged. In many matters, definiteness is important, and one who can not find much that is definite should avoid the teaching of children. The best teacher will encourage intelligent conformity in what is definite, allow nonconformity in certain nonessentials or inconsequential affairs, and facilitate originality in what has prospect of improvement.

Normality as Progressive Maturing

Tagore attributes to man two phases, "one in which he tries to make indefinite additions to the powers of his senses and limbs, borrowing from the store-house of cosmic powers; and the other in which he tries to realize, through various stages, his humanity, which reveals him much more intimately than the fact of any extension of power. The one has the principle of addition and the other that of growth." [14] Progressive development in these two phases may begin at birth and continue throughout life. Normality is then progressive maturing. Every one, child or adult, is normal only as long as he progresses.

Children's claims to freedom depend upon this thesis. As the child has potentialities rather than well developed powers, he has often been denied freedom to develop his potentialities. Indeed, he has been regarded as a being whose presence is

[14] *Education and Leisure,* S. E. Lang, editor (J. M. Dent and Sons, 1930), p. 232.

not desired, or, at best, one who should be seen but not heard. The adult, on the contrary, with many powers developed, is welcome. The advantages of the adult are sometimes due to physical prowess as well as to correct, conventional conduct. When crabbed age reproaches youth, the implication is clear that age views youth as abnormal. In turn, youth regards age as stagnant, even though in command of many powers, and, therefore, as abnormal. More properly one may say that youth can not, in all matters, be judged by the standards of the mature, but that, when judged by standards of progress, youth, more often than not, is advancing more rapidly than the person of greater years. Likewise, youth may not ascribe abnormality to age, if with age has come fuller powers of adaptability, progress, and knowledge of life. Impulsive, careless youth and stereotyped, stagnant age are at odds, but progressing youth and progressing adults are not.

The standards to apply to childhood and youth are those of progressive conduct and potentialities. Upon the basis of what has been learned, new discoveries in living are made. Lacking the experience of an adult, a youth is likely to adopt a course of action from which he can not derive maximal benefit with respect to the matter in hand. For this ill-advised action, counsel, not reproof, is needed. Such counsel will consider two aspects of life: first, the potentialities of the young; and, second, the prospective responsibilities of adulthood for which planning is necessary. Excellent teaching provides such counsel. It respects the present attainments of the child, allows for lack of experience, and provides activities to develop potentialities. To do otherwise is to infringe upon the child's rights in the normal process of maturing. In short, normality is the same in childhood as in adulthood; in neither case has maturity or development run

its course, although it may have gone farther in the adult.

The normality of childhood is not equally clear in all the categories of normality. In the socio-individualistic category, one will grant that, from the limited means at the child's disposal, the welfare of society and self are considered. But the balance is often disturbed by juvenile egoism, which overemphasizes immediate individual welfare. This juvenile condition is normal for the child and properly leads to satisfying and instructive activity and learning. So also, in the psychological category, children are normal when they are using their equipment advantageously. In the legal category, the conduct of childhood is safeguarded by a period of parental responsibility which shields the child from the full application of difficult principles of action. Normality here depends upon adults who provide instruction in legal conduct as rapidly as the child's problems and an understanding of them permit. The same is true of the ethical category. In these last categories, adults recognize that childhood's activity will often be misdirected and unconformable with the standards of the mature, and that what would be reprehensible in an adult may be turned to profit in the developing child. The stifling effect of rules before they are needed or can be understood or of thwarting reproof is seen in the over-docile and blasé youth and adult. Normality requires a continuance of activity with increasingly better self-direction in all the categories of conduct.

Many forms of conduct spring from sources which require redirection and refinement. Two principal means are employed for these purposes: substitution and sublimation. Children resort to many undesirable activities, because they have nothing better to do. Boys enjoy ball games better than fighting, although rivalry and similar tendencies are present

in both activities, but they must have an open area and equipment to play ball. When ball playing is made possible, this substitute for fighting seems to be in no way undesirable and in many ways desirable. It is, therefore, regarded as a satisfactory substitute. Substitutions are not equally desirable. Adults are often inclined to substitute quietude in children for noise. Isolation of some sort is a common accompaniment of such quietude—the child is required to sit silently or is tied to a door knob. All cases of this kind breed covert reactions which are likely to lead to undesirable substitutions. A substitution, to be successful, should be desirable from both the child's and the adult's point of view. Successful substitutions also provide usually for the exercise of the same tendencies as the activity for which the substitution is made, and they elicit an equally potent exercise of these tendencies.

In sublimation, a change occurs in attitude and action. If, after ball playing has been substituted for fighting, the new activity has been found desirable by the participants, and, if a new attitude of friendly group rivalry has developed, the earlier pugnacious attitude is sublimated into a social attitude that is more desirable. In such cases, then, sublimation follows substitution. It may, through rationalization, precede substitution, as in the case of one who discovers the futility of a given course of action and decides upon another course. This rationalization is fostered by teachers when they try to inculcate a new pupil attitude by showing the advantages of a proposed activity.

Difficulties arise in this process from the pupil's failure either to foresee the proposed activity as satisfactory or from his immediate unpreparedness for it. A child found petty thieving a short and easy way to possession. His teacher

tried to convert him to a more social attitude in terms of self respect and respect for property rights. This approach failed, because the boy still desired the returns from pilfering. A profitable extraschool occupation was arranged and proposed to the boy. The boy then foresaw correctly the safety of this activity and also its increased returns for himself. As his desire was for profit, he was able to see the advantages of a sublimation of his attitude, although it was still highly individualistic. After he became an earner, he saw clearly the value of integrity, and then assumed a socio-individualistic attitude. It should be stated, however, that much of the taking of property by children is not motivated by desire for financial profit as much as by impulsive extension of self through property. This naïve vanity, though persistent in some children, often needs only a substitute activity that is equally interesting and not a substitute return for the activity. Prudence and discretion in such cases, as with the fantastic tales of early childhood, come readily with social maturing.

When used as a means for diverting certain tendencies, substitution and sublimation are sometimes so unsatisfactory and incomplete that the child continues to battle with his earlier desire and to practice covertly what he is supposed to abandon. This leads, as Marston says,[15] to the regarding of this secret behavior as abnormal, because it is said by good people to be wrong. A more liberal notion about what is wrong can correct certain cases, and better diagnoses of cases can correct others. In spite of all that can be done through sympathetic counseling, much must be done by indoctrination through precept and example. If objection be made to the

[15] William M. Marston, *Emotions of Normal People* (Harcourt, Brace and Company, 1928), Chapter XVIII.

last statement, one must readily admit that it is not ideal and add that certain forms of juvenile conduct are also far from ideal. Perfection in resourcefulness, coöperation, and counsel is necessary for the attainment of ideal relationships between adults and children.

Other aspects of juvenility which require redirection and refinement are impulsive outbursts of anger, inability to see another person's point of view, inability to define and solve life situations as other problems are solved, lack of poise, of resourcefulness, of adaptability, of stability, and so on.[16] All these, when redirected and refined, constitute what Tagore might properly term the realization of one's humanity which reveals oneself more intimately than sheer physical control and knowledge. In the process of maturing, both phases of development, additions to powers and growth in humanity, proceed concurrently. Both are attributes of the developing mental functions, when those functions are employed in ways described in the foregoing chapters. The naïve, impulsive responses of childhood then give way, as Freeman states,[17] to broader considerations than those of the present moment. The dynamic effects of organized and socialized knowledge and skill then gain dominance over juvenile tendencies and undeveloped potentialities.

Group Normality and Individual Conduct

Normality finds no place for unsocial individualism. The normal individual can not pursue his own ends without due reference to society. He can not, as did Raskolnikoff,[18] de-

[16] F. N. Freeman, *How Children Learn* (Houghton Mifflin Company, 1917), Chapter VI.

[17] *Ibid.*, p. 102.

[18] Fedor Dostoïeffsky, *Crime and Punishment* (Everyman's Library, J. M. Dent and Sons, 1911).

cide upon a Napoleonic career and ruthlessly sweep aside other persons and appropriate their property. A person who does so is vainly trying to confine his conduct to only two of the four categories, the psychological and the legal. He can succeed only within these categories, and, in these only because of individual capacity and because the meshes of the law are too coarse to catch him. He fails dismally in the socio-individualistic and ethical categories.

Every one's total conduct is a mixture of activities which fall within all four categories of normality. Variations occur in different situations in each category. A person may vary his ethical conduct with different groups. He may assume the rôle of Robin Hood and have a savory reputation at home but not elsewhere, or, by assuming the rôle of a worldwide benefactor, have an excellent reputation everywhere save at home. One can not satisfy the requirements of normal conduct in either of these two rôles.

Group normality, like that of an individual, depends upon progressive conduct in the four categories of normality. Individuals as members of a group may not, therefore, run counter to general social welfare any more than the single individual can. Since many groups are only narrowly social, a member of such a group can not justifiably resign his own standards of conduct in favor of those sponsored by the group. Ethical normality can be merged with the interests of a group only when the group exhibits normal conduct. Socialization within a group may, therefore, be either good or bad, according to the group's interests and activities.

Group conduct may diverge in two directions. It may lead to forms of conduct which are supplemental, as in the case of athletic and church groups, both of which may be normal. Or, it may lead to forms of conduct which are mu-

tually antagonistic, as in the case of certain gang activities which conflict with the ethical standards of a church group. Membership in supplementing groups is consistent, and, if the groups are defensible, the ensuing conduct is likely to be normal. Membership in antagonistic groups is inconsistent, and it is likely to lead to compromising hypocrisy. For the development of individual normality, the possibilities of group socialization depend upon membership in groups of the supplemental order, with the proviso that the conduct of each group be also normal. In this way individual standards of normality can be developed with due regard to practical social affairs and the conditions of effective learning.

Membership in desirable supplemental groups is important for all individuals. A child of great originality probably needs the contacts of such groups even more than others do, for social and individual welfare depends heavily upon him. The normality of genius is progressive conduct; the genius is an extraordinary experimenter. But abnormality in one or more categories may outweigh normality, even in the genius. One may doubt the value of the bohemian's total conduct. A better mixture is found when the genius combines philistinism upon which social success may depend with originality upon which individual success depends. The genius needs society upon which and with which to work. Lack of social competence handicaps him more disastrously than it does other persons, for more is at stake in his case. He will avoid wasting his life in an endless round of perfunctory group activities, but he will profit by a knowledge of how other people react to matters of interest to himself.

The school is a group laboratory in progressive conduct. It is a place for the development of individuals for a changing civilization. If modern conditions require social experimenta-

tion, the school must train pupils in experimental conduct. In this laboratory, experimental conduct can be tried vicariously and directly. Attention has been called to the dangers and difficulties of school experimentation in social life, but, if the school evades this training, society is almost certain to follow an even more dangerous course.

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(See also references for Chapter XIII.)

CHAPTER XIII

PROBLEMS OF ABNORMAL CONDUCT

Definitions of Abnormality

The preceding chapter has delimited normal conduct. Emphasis has been laid upon the fact that one's concept of normality depends upon whether the view be sociological, psychological, legal, or ethical. It has been indicated that normality is a relative term and connotes graduated distribution of conduct. The same general criteria exist for abnormality. The abnormal are not a species. The terms abnormality and insanity are more nearly items of legal than psychological nomenclature. Strictly speaking, mental balance and integrity are exceptional rather than usual. This is emphasized by Terman,[1] who shows that more than five per cent of children going to school are neurotically inclined.

Abnormality need have no derogatory implications and need not be socially or individually detrimental. For example, if the average height of individuals of a given age is five feet four inches and if the average constitutes normality, then any one either more or less than five feet four inches is abnormal. There are hundreds of situations of this sort, as regards both physical structure and function or conduct, which make little difference in one's life whether abnormality exists or not. There is also an entirely different and perhaps a more

[1] Lewis M. Terman, *The Hygiene of the School Child* (Houghton Mifflin Company, 1914), p. 289.

usual interpretation of abnormality which carries a somewhat derogatory implication. It is this latter type of abnormality which Terman says it is the school's duty to combat. A condition of either physical or mental abnormality exists when the working efficiency of the individual is not maintained. This does not mean potential efficiency. It is impossible to do more than approach the physiological limit. A person is socially abnormal when his conduct does not correspond closely to the social norm. For instance, a child may show conduct which approximates his own physiological limit and can therefore be termed effective in so far as capacity is concerned and still fall below the social norm and be classed as permanently defective or abnormal. Or, a person may be abnormal by consistently exceeding the social standard. In many situations society's judgment of the abnormality of one's conduct is very simple. What the social standard lacks in logic it is likely to make up in vigor. In India, for example, there are sixty million outcasts or "untouchables." To a Brahman or any member of a high caste who is orthodox in his point of view, these "untouchables" constitute practically a different species. It is said that if the shadow of an "untouchable" passes across food which is being prepared for a member of a high caste, this food must be thrown away. These "untouchables" may be called absolutely abnormal. The term "absolutely" is used in the social sense and denotes an individual who has failed to conform with some rigidly exacting rule. Thus, although it may be correctly said that both normality and abnormality are relative terms, especially if the functional standpoint is adopted, nevertheless and seemingly paradoxically, it is likewise true that in many actual situations abnormality is absolute. Some types of abnormality, particularly those which are organic in their foundation,

stay within one category of description. For example, one either does or does not have syphilitic degeneration of the brain and the conduct disorders which are contingent upon that affliction.

Use has been made of the terms, "organic" and "functional." Extreme abnormality or insanity may be either organic or functional. Organic insanity is that which rests upon or is caused by a definite physical pathology. Functional insanity does not rest upon physical pathology, although it is likely that some insanity is termed functional for which there is an organic basis which has not been discovered. At present, it is fairly certain that there is a large number of people confined within the walls of institutions for the deranged whose difficulty is largely functional. Careful diagnosis in many large hospitals often fails to reveal an organic pathology. But case studies of individuals may bring to light the functional origin of mental derangement where no medical diagnosis has been of avail.

One of the unfortunate or one of the happy things about insanity, depending upon the point of view, is that so much of it is preventable. Entirely apart from the comparatively small number of institutional cases, there is a colossal amount of inefficiency which is caused by neurasthenia, psychasthenia, and attendant disorders, a large part of which is definitely preventable in nature. The significant item from the standpoint of school people is the fact that functional disorders are usually early in their inception and frequently preventable at that stage. Because the errors of the teacher, unlike the errors of the surgeon, do not result in an immediate crisis in the life and conduct of the pupil, it is easy to dodge blame and minimize the likelihood of serious consequences following poor teaching. But it must be borne in mind that, in ad-

dition to the imparting of content, a poor job of which may leave merely a gap in the pupil's knowledge, the teacher's personality and emotional trend likewise have their effect and that when this effect is sufficiently ill-timed and sufficiently violent it may result in permanent mental or emotional upset.[2] Herein lies the real problem of the school.

Types of Abnormal Conduct

It would be difficult to state mutually exclusive categories of abnormal conduct between which there would be no overlapping either of symptoms or causation. For purposes of convenience, however, it is advantageous to classify abnormality types in terms of the predominant conduct exhibited. The following classification is not presented as systematic psychiatry, but is rather a list with a few qualifying comments of some of the types with which the school either comes in direct contact or which serve as the foundation for the development of later disorders.

1. *Deficiency disease type.* Regarded as a chemical compound, the human body is a delicately balanced mechanism. This chemical balance affects conduct. Of recent years special study has been devoted to the function of the ductless glands. Pseudo-subnormality in intelligence may result from gland deficiency. Happily, certain phases are subject either to school or clinical treatment. This is true, for example, of cretinism.[3] Many readable treatises are now available upon the general features of bodily stabilization.[4] Diseases caused

[2] Terman, *op. cit.*, p. 291.

[3] John J. B. Morgan, *The Psychology of Abnormal People* (Longmans, Green and Company, 1928), p. 323.

[4] Walter B. Cannon, *The Wisdom of the Body* (W. W. Norton and Company, 1932), Chapter 17.

by malfunctioning of the ductless glands should be referred to a clinical physician, although it is of value to the teacher to be able to detect the more obvious external symptoms of deficiency diseases.[5] When treatment is begun sufficiently early the extent to which a child's health and school work may be improved is remarkable.

2. Over-pressure type. The human infant to-day begins with about the same equipment, mechanical and mental, as the new born babe of three thousand years ago. Biological belief does not incline to the theory that functional habits acquired during the lifetime of one individual are transmitted either exactly or in the form of improved capacity to descendants. But accretions to the social heritage which is transmitted have been enormous. The child faces a society which is infinitely more complex with each generation. He faces this society with no augmented special aptitudes based upon inheritance. Furthermore, society expects this new member in its ranks to assimilate a great deal of the social heritage. This assimilation takes place through the school. As the amount which must be mastered grows, the pressure upon the pupil increases. Individuals vary widely in the ability which they possess to withstand pressure. Therefore, one naturally expects to find and does find within any school those who, through their inability to stand up under this strain, have suffered and lapsed into some form of compensatory reaction. Not only do pupils differ in ability to withstand social pressure but also the same person varies from time to time. The teacher should be supplied with all the information available which will serve to indicate these differences. When he is convinced that a pupil is working fairly well up to

[5] Douglas A. Thom, *Normal Youth and Its Everyday Problems* (D. Appleton and Company, 1932).

capacity, additional pressure to bring him up to some arbitrarily set general standard fails to accomplish its purpose and results in a definite psychic shock.

3. Physically defective type. Physical defects are abnormalities and may serve not only to complicate the individual's mechanical adjustment to the world, as, for example, the preventing of a boy from playing football, but also to raise mental and social problems. The awkward social reactions of a crippled school companion are likely to result in a definite mind set. Over solicitation, not to mention its more dangerous opposite, ridicule, are both fraught with danger for the emotional adjustment of the physically unfortunate. The intelligent teacher can do a great deal to prevent the development of unfortunate traits by a little judicious advice to playmates. As a general rule the defective desires to be regarded as normal and better psychological results are obtained when this is done.

4. Regressive type. Regression is one of the directions which conduct that is roughly thwarted may take. Those who are teaching at the senior high school or college levels are often struck by the fact that so many students are deficient in self-expression. This does not necessarily mean that they are consistently regressive types. Reticence at expressing oneself is usually the result of fear of ridicule. The backward or bashful child may perhaps develop into a case of regression. When regressions become extreme or take a morbid turn a case of psycho-pathology is likely to be the result. Two school practices may be of avail in preventing this development. First is the encouragement of students to express themselves constructively and freely. The value of socialized methods of recitation has already been demonstrated for the furtherance of this purpose. The second

is the prevention of destructive, derogatory, or sarcastic criticism. When students who are loath to recite are questioned by any one who is enough concerned to check in the matter, the early inception of this habit is almost always found to rest upon some form of ridicule, either from the teacher or from some fellow-student. The *argumentum ad hominem* type of criticism even at college levels has even less place in school teaching than it has in debate.[6]

5. Compensatory type. The caution has been given in introducing this discussion of abnormality types that the categories are not mutually exclusive. Neither are the divisions of many other useful systems of classification. The professional activities of doctors and dentists overlap considerably, but the terms serve as useful descriptions of the principal activities of those engaged in these professions. Similarly, exodontists and periodontists perform tasks peculiar to the category of the profession to which they belong although both frequently carry on general dental practice. Thus, a discussion of some of the more abnormal types of behavior is not given under the delusion that it is possible to classify people arbitrarily when the sum total of their activities is regarded. It is true, as in the case of the doctor and the dentist and the exodontist and the periodontist, that individuals through habit adopt characteristic modes of solving perplexing life situations, and it is possible to classify these general methods.

Another point to be noted about abnormal behavior of various sorts and this is especially true of compensation, is that the abnormality often consists of the *degree* to which the conduct is exhibited. Not only is the disorder the result of the

[6] Ernest H. Wilkins, "On the Place of Sarcasm in Higher Education," *Journal of Higher Education,* III (1932), 451–453.

extent to which the conduct is extraordinary but also the undesirability of the conduct is likewise a function of degree. The present topic of compensation serves as a good example. Compensation to a moderate extent may serve a valuable purpose. In moderation it may be a defense which absorbs the force of rude shocks. In many ways it is fortunate that human beings possess tendencies which lead them to emerge from mental crises by a process of semi self-deception. It is not always that the objectively minded person attains the happiest solutions in the world. As a matter of fact, many institutional cases are happy in a general sense of the word. A person, too clear in his vision of the world and possessing no ability to compensate for disaster, often batters himself to death against the wall of the world's brutality. But the regressive or compensatory type either withdraws from the harsh realities to the greatest extent possible or dulls their edge by the substitution of narcotic but pleasant partial realities.

Morgan, in a discussion of compensatory disorders, says that compensation is always a pugnacious reaction backed by a feeling of inferiority and that the battle is carried on against forces which are supposed to be producing the weakness which in turn causes the feeling of inferiority. He lists the following as the principal of these forces:

Ignoble heritage	Odious comparison
Ignoble impulses	Feelings of debility
Supposed persecution	Restraint

Evil in abstract form.[7]

Morgan further states that the outstanding characteristics of the extreme compensatory type are egocentricity, failure, and inconsistency.

[7] *Op. cit.*, pp. 547–563.

When compensation is carried to excess, there results a derangement known as *paranoia* which is systematized delusions either of persecution or grandeur. Many people have a mild strain of this tendency. If one is going along the street, for example, and happens to see two friends chatting confidentially who glance up at him as he passes and then laugh knowingly, a rather natural reaction is to feel that the conversation has been personal and that the laugh indicates scorn. The sensible basis for this feeling is the fact that occasionally this may actually be correct. When one broods continuously over an incident of this sort, serious disorders follow. Persons inclined toward violence usually reach the point where they begin to do something about the supposed wrong, and then society must intervene for an institutional case is beginning to develop. There is a certain inmate of a hospital for the insane who believes that he is the president of the whole universe except for one county. This individual was defeated in a small town election. He brooded over his defeat and imagined it was because of a conspiracy of his supposed friends banded together treacherously to plot his downfall. He undertook to remedy this wrong by murdering the people subject to his suspicions. Being apprehended and confined in an institution for the criminally insane, he has lapsed into a form of extreme compensation which has been progressive and observed with considerable interest by the attendants. He first imagined that he had won the state election, then the national, then an international, and then a universal. An interesting and significant fact in the organization of this delusion is that the individual imagines that he is still behind in one small district. This is a ghostly residue of the objective fact behind the whole situation which was the original defeat in the small town election.

As with most abnormal derangements, the task of the school is primarily preventive. Re-education is possible in the early stages of many of these disorders but prevention is more valuable. One of the principal difficulties with compensatory mechanisms is that, although when non-violent in nature and moderate in extent they may serve to preserve the individual's ego and thus maintain his self-respect and morale, they serve no constructively motivating purpose and for that reason are valuable only in a negative way. When these tendencies are noticed in school children an effort should be made to limit their duration. When the immediate crisis is past, an attempt should be made at once to conquer the difficulty which is causing the inferiority and the necessity for compensatory activity. It is as though the compensation were a tourniquet which is valuable to give an immediate solution and aid to a person with a severe cut or compound fracture but which, in itself, becomes a menace to health if it is kept applied permanently. The same thing would be true of narcotics which solve the immediate problem of pain but which are very dangerous as habitual solution. Compensation is much like a narcotic. In fact, it may be termed a mental narcotic.

6. Hysterical type. It is a fact well known to physicians that many of their clients are not so ailing as they believe. In fact, the method of treating hysterical patients has become fairly well stereotyped. The H_2O hypodermic, harmless bread pills, and the like are traditional and effective methods of diminishing hysterical symptoms. Furthermore, these amusing remedies actually serve a real purpose, for it must be borne in mind that the hysteric, in his own way of thinking, is actually in as great danger as though he possessed the imagined ailment. Not only that, but he is actually doing himself damage

by worry. Thousands of people a year are being treated more or less systematically for difficulties which require a psychiatric rather than a physical diagnosis.

The essences of hysteria are excitement and self-deception. The frequent occurrence of hysteria may be explained by its obviously utilitarian value. Some cases which might be called hysterical malingering are originally really the result of deep-laid plans and careful calculation. In the majority of cases, however, the hysterical seizure is a result of excitement which is not entirely diffuse in its objectives since it often serves to relieve the sufferer of some undesirable duties. With regard to the self-deception phase of hysteria, it must be said that all hysterics are not deliberately shamming. This is difficult to demonstrate since it depends in the last analysis upon subjective data but many observations incline one to this conclusion.

Hysteria is not a specific disease. It is not inherited as such, although a hysterical mother may have a hysterical daughter because of training and example. Hysteria is a generic term applied to certain types of personality disorders the final purpose of which is to facilitate in a sensational but effective manner the solution of the sufferer's problems. Efforts to establish a specific pathology for hysteria have been unsuccessful. Likewise, have attempts been fruitless to systematically classify the symptoms.

One simple example may serve to show the nature of hysterical conduct. A certain little girl who was actually ill for a short period of time became enamoured of the attentions which she received and the excitement which her illness created in the household. Incidentally, it may be noted that undue excitement and attention attached to illnesses of children are

a prime way to encourage hysterical malingering in the future. This little girl liked the flowers and candy and visits of her friends and was somewhat loath to relinquish her sickness when she was fully able to be up and about. She did so, however, for a period of time and the incident seemed closed to all intents and purposes. Presently she became ill again. Being an amateur at hysterical seizures, her ailment was somewhat vague although in a general way it resembled the one which had legitimately confined her to bed before. The same attentions were showered upon her by over-solicitous parents. The family physician, although realizing that there was nothing radically wrong, hesitated to tell the somewhat belligerent father that his daughter was simply faking and, therefore, administered a mild sedative and let it go at that. In the course of time, the little girl became an expert hysteric. Her specialty was hysterical paralysis. The distracted parents finally hit upon the source of a cure. It was in the form of a hard-hearted and cruel psychologist. This man, a friend of the family, immediately recognized what was involved. He outlined a rigorous program. The child was by this time a confirmed paralytic. All visits of companions were cut off, and flowers and gifts were intercepted. Disagreeable medicines were administered with the admonition that they were important and would make her well. The parents, at some cost to themselves, diminished their expressions of solicitation. Finally one day, a five-pound box of candy which the little girl liked was brought into the room. It was placed on a bureau across the room in full view of the patient. The child was told that the candy was to be her reward for learning to walk again and that as soon as she could walk it would be hers to eat as much of as she could. With this comforting statement, doctor

and parents left the room. After a little preliminary whimpering, the child got up and walked across the room to get the candy. The cure was later completely consummated.

Hysteria may at times serve a protective function. Fear of an impending doom may cause hysterical outbursts. A period of economic stringency usually brings to light a certain number of cases of mismanagement of financial institutions which lush periods have made easy to conceal. Those who are placed upon trial for embezzlement, fraud, financial mismanagement, etc., often appear in court on a stretcher. One often reads "human interest" stories about the pitiful collapse of the defendant's health. It is unquestionably true that the nervous strain of an accusation, just or unjust, and the ensuing trial may cause the health of some to collapse. There is likewise not the slightest doubt that many of these collapses of health are purely hysterical and calculated partly to secure sympathy and partly to postpone the impending judgment.

All teachers encounter cases of schoolroom hysteria. The teacher's task is to re-educate the hysteric to a more balanced and integrated point of view. One step in this re-education is to avoid placing the student in a situation in which desperate measures are necessary. Sometimes hysteria is justifiable on the ground that the hysteric is in a well-nigh impossible situation. Again, without being calloused or hard-hearted, a teacher should not grant favors or special dispensations to those who there is some reason to believe are escaping obligations through feigning disability.

7. Genius and feeble-minded types. Genius is a type of abnormality. Feeble-mindedness is also a type of abnormality. The psychological pedagogy of these extremely diverse groups has been the subject of wide experimentation and study. Solutions have been arrived at, put into practice, and discarded.

For example, there was a time when homogeneous grouping was regarded as solving conclusively the problem of extreme differences in mental ability. Actual experience with homogeneous grouping has shown that, although it serves its purpose in intellectual fields, it is open to serious criticisms from the social standpoint. Modified plans are now being tried.

The genetic factors in genius are not entirely clear. Terman has conducted studies of genius from the genetic point of view.[8] That hereditary factors are involved is unquestioned. That capacities for interest and attention also enter in is not so well established but fairly certain. Nor is the hereditary basis of feeble-mindedness entirely clear. Feeble-mindedness is probably not a unit character. It is certainly not inherited in as predictable a way as has been formerly supposed.[9]

Without going deeply into the biological or psychological nature of genius and feeble-mindedness, it is possible to state a few principles upon which the pedagogy of these groups should be based, these principles emphasizing the abnormal peculiarities of the genius and the feeble-minded.[10]

a. Genius is a misleading term and implies that the individual may be superior in all respects. It is frequently a term which is applied to adults after long periods of specialized training who give the appearance of superiority of capacity which may not have been present. To be meaningful, the term *genius* must imply early or innate ability. One of the educational problems is the early diagnosis of genius.

[8] Lewis M. Terman, *Genetic Studies of Genius* (Stanford University Press, 1925–26).

[9] H. H. Goddard, *Psychology of the Normal and Subnormal* (Dodd, Mead and Company, 1919).

[10] Fay Adams and Walker Brown, *Teaching the Bright Pupil* (Henry Holt and Company, 1930). Also Alice Descoeudres, *The Education of Mentally Defective Children* (D. C. Heath & Co., 1928).

b. True genius requires freedom. The discussion of normality has emphasized the necessity for a balance between discipline and liberty. It is hard to subject the true genius to rules which have been formulated for the conduct of the majority. Therefore, it is the practice of master teachers to allow the creative abilities of the highly superior to function without undue hampering.

c. People are not born with genius personalities. Personality is an outgrowth of social contacts. It must evolve in every one. Even though genius native ability may possibly mean that a superior personality will result, it does not guarantee this. Thus, there are many people who may be called geniuses in their command of a special field whose personalities are anything but likeable or intriguing. Strangely enough, these superior mental abilities sometimes handicap rather than facilitate the development of the genius' personality. This is because such superiority is apt to lead to opinionation, dogmatism, intolerance, impatience with others, etc.

d. Although discussed psychologically as abnormalities, neither genius nor feeble-mindedness should be described as such to those who are in either class. To tell a mother, for example, that her son is not able to pursue a certain course in college because he is stupid is not wise. Also, the experience of such men as Terman has shown that it is sometimes detrimental to even the mentally superior to be too well aware of that superiority. The special pedagogy of the distinctly superior and inferior has made it clear that these differences in ability should be discussed as such and not be tagged with grandiose or derogatory terms.

e. The genius type should be allowed a maximum of creative opportunity. One of the difficulties, of course, with

the superior person is that, having finished routine work, he often becomes a disciplinary problem. Many teachers adopt the expedient of piling on more routine work. This is not an adequate solution to the problem. The superior boy or girl quickly recognizes that he is being given back work and, when once the principle is understood, such work is resented. The best possible outlet for superior ability is creative activity. Mearns has demonstrated some of the enormous possibilities in this type of teaching.[11]

f. One of the principal problems of the pedagogy of extreme feeble-mindedness is that sooner or later the individual who is possessed of this defect must come to the realization, unless the level of intelligence be too low, that his accomplishment is not up to average. Sometimes this realization comes hard and leads to disastrous consequences. Proper early training, however, may entirely or completely offset the shock of such knowledge. Happy adjustment is not dependent upon lack of realization of the true state of affairs.

g. The pedagogy of the abnormal, aside from the question of content itself, is primarily one of appreciation. Many other undesirable types of abnormality which depend upon poor teaching of the genius or feeble-minded could be avoided if the early pedagogy were good. The superior should be taught to appreciate the many-sided nature of human accomplishment. The intellectually low grade should be taught to regard any given phase of accomplishment as merely one of many standards of value. There is no conclusive evidence at hand to demonstrate that the extremely

[11] Hughes Mearns, *Creative Power* (Doubleday, Doran and Company, 1929). See also Harry L. Miller, *Creative Learning and Teaching* (Charles Scribner's Sons, 1927).

superior is the easiest group in the world with which to get along. Thus, although compensatory factors may be lacking when only intellectual capacities are considered, it by no means follows that there are not personality traits, attitudes, and habits which balance the differential.

School Influences Producing Pupil Abnormalities

One ordinarily thinks of the school as a place in which physical and mental hygiene are present at high levels. The school is further conceived of as an agency for diminishing abnormal tendencies in so far as this may be possible and for producing certain features of homogeneity in society.[12] These conceptions of the school are perfectly normal for it has been charged by society with the duty of transmitting the racial heritage from generation to generation.

Unfortunately, close scrutiny reveals the fact that the school is not universally benign in its influence. It is actually a cause of morbidity. The evil effects which the school sometimes exerts upon the lives of pupils can not be attributed to poor teaching entirely, although this is sometimes a factor. Rather, certain phases of social evolution made it inevitable that the task of the school would be complicated to the point where certain students would suffer from the necessary organization. As early as 1885 the effects of over-pressure in the high schools of Denmark were studied by Hertel.[13] He systematically investigated conditions which had been suspected for some time. His results indicated not only a high incidence of various types of morbidity but also seemed to establish a causative relationship between phases of school organization

[12] W. C. Bagley, *Determinism in Education* (Warwick and York, 1925).

[13] *Overpressure in the High Schools of Denmark* (London, 1911).

and certain types of morbidity. Terman summarizes the findings of Hertel and other investigators and notes the following injurious effects of the school.

1. The relationship existing between morbidity and number of years of school attendance
2. Decrease in attentiveness as the school year draws to a close
3. Deleterious influence of the activities of the school on basal metabolism
4. Unfavorable results of lack of fresh air and play
5. Neurotic tendencies arising from worry over school work [14]

Although the undesirable effects of the school upon pupils manifest themselves in a number of ways, it is possible to give a general explanation of the whole situation. It is to be borne in mind, first of all, that the infant to-day comes into the world with the same potentialities as the child of many centuries ago. Previous mention has been made of the fact that the social heritage has increased from generation to generation. Since it is the task of the school to transmit this social heritage, school organization has become more complex as the accretions in content which must be transmitted have accumulated. Progressive changes in method have been forced. In a futile effort to transmit all or nearly all of the social heritage in detail, some schools have failed to accomplish this purpose and have succeeded only in magnifying the psycho-pathological effects of school life.

School influences producing abnormalities may be summarized as follows:

1. *Poor provision for guidance.* Koos and Kefauver have shown that the increasing complexity of the modern school

[14] Terman, *op. cit.*, p. 404.

has emphasized the need for guidance of the progressive conduct of the pupil.[15] Much of students' indecision comes from lack of knowledge of what to do and how to do it. Although the word "counseling" describes better than the word "guidance" what the teacher can do, it is valuable to have some program of systematic coöperation with pupils in the planning of future activities. Failure to have such a program is indirectly responsible for later worry and difficulty.

2. Unreasonable assignments. In classes where little attention is paid to individual differences and assignments are of uniform length, there is likely to be difficulty experienced by the poorer students. This often leads to cheating. Cheating may tend toward other types of deception and eventually terminate in generalized abnormalities.

3. Abnormal teacher personalities. The time has long since passed when it was believed that all that was necessary to be a school teacher was to have an adequate command of subject matter. Investigations such as those described in Wickman's *Children's Behavior and Teachers' Attitudes* [16] indicate clearly that the nature of the teacher's personality pattern exerts a profound influence upon pupils. For one thing, pupils have not developed the pachydermous qualities which enable adults to survive the ridicule or derision of their equals and superiors. Neither are compensating psychological mechanisms so well developed in school children.

4. Lack of supervision. Many students develop abnormalities which result in failure in school work through poor balancing of activities. They have an inclination to undertake too many extracurricular activities. Teacher supervision, coupled

[15] Leonard V. Koos and Grayson N. Kefauver, *Guidance in Secondary Schools* (The Macmillan Company, 1932), p. 1.

[16] E. K. Wickman, *Children's Behavior and Teachers' Attitudes* (The Commonwealth Fund, Division of Publications, 1928).

with a guidance program, can almost always avoid difficulties. Many cases of nervous breakdown which occur in high school children are found, upon investigation, to be the result, not of an excessively heavy program of study, but of the attempt to do too much outside work.

5. Poor physical condition. In most of the large city systems at the present time housing and medical inspection are entirely adequate. This is not always the case in smaller schools. Terman lists several types of school children who are particularly susceptible to poor school environment.[17]

6. Poor school organization. Conclusive experimental work on the best organization of the day's program has not yet been done. There is a tendency to break the school day into a number of periods which are interspersed with opportunities for relaxation either in the form of play or in some equally desirable way. The school which is not organized to provide regular periods of let-down is jeopardizing the morale of many of its pupils.

7. Poor food. The day of the hot school lunch is at hand. The day of the cold lunch brought to school by pupils and serving as the sole article of mid-day diet is past. Even at present, thousands of children are not getting correctly balanced mid-day meals. This is sometimes due to lack of money, or perhaps to the fact that the money which has been provided for lunches is spent for candy.

8. Poor pupil morale. Schools differ in the level of their morale. Like a football team, the school is not contributing the most to individual development unless group spirit prevails. This is partly the task of the principal to secure. It is partly the task of the teacher. Some schools sink to a low state of demoralization resulting in semi-riotous assembly

[17] *Op. cit.*, p. 405.

scenes and abominable classroom discipline because of administrative ineptitude.

Home Influences Producing Abnormalities

White has said, "The whole process of the child's development has as its goal its emancipation from the parent. . . ." [18] If this statement of the normal development of the child be true, how often is its theory violated! In continuing his discussion, White emphasizes the fact that the child must be free from "crippling dependence." And yet, hundreds of parents spend much of their time building up this "crippling dependence." Many parents feel that they have failed in their duty when their children show initial signs of independence instead of subservience. There comes to mind the case of a young woman of twenty-three who has never bought an article of clothing, never selected a friend, boy or girl, never attended an institution, church or school, upon which her mother has not passed arbitrary judgment. At the age of twenty-three, this young woman is the subservient shadow of another's life instead of a rational and real person. Her conduct has been progressive but progressively degenerative so far as her own personality is concerned. It would be virtually impossible at the present time to undo the wrong which has been done her. On her mother's death she will receive a severe psychic shock and likely wander through life in a daze, unless she is able to transfer this set of sycophantic reactions to some other individual, perhaps a domineering husband who will provide approximately the same situation in which she was reared.

[18] Mary Buell Sayles, *The Problem Child at Home* (The Commonwealth Fund, Division of Publications, 1928), p. 28.

The above case may be an exaggerated one although it is true, but it is no exaggeration to maintain that thousands of similar cases exist. Sayles holds that the enslaving of the child's personality and the dwarfing of its maturity as the result of abnormal parental love are a form of compensation of "a disappointed adult love life." [19]

That the child needs guidance during its early years can not be denied. That in the preschool days this guidance depends almost entirely upon parents is likewise true. But guidance should have as its objective respectful independence and not subservient dependence. With independence of conduct as the objective, control should be progressively relaxed and "guidance" should become more and more counseling in nature.

Unfortunately, it can not be assumed that the home training of the child has been directed toward the development of a balanced individuality. It is all too easy to recognize those pupils who have been victims of the other type of training. As a matter of fact, on those not too rare occasions when the school goes counter to the wishes of one of the dominating parents, it is not uncommon to see the genesis of the child's warped personality present in the flesh demanding the reason for the "undermining of good home training." Therefore, even when psychologically correct procedure is being followed with children of this sort, it is sometimes extremely difficult for the teacher and the school administrator, for the psychological procedure implies that a certain amount of independence will be developed and when this is noticed at home it causes trouble. Nevertheless, this is the training that is needed and this is the training that should be given. Children who have been overdominated should be given tasks requiring independence of

[19] *Ibid.*, p. 29.

judgment and conduct, small at first but progressively enlarged. In this way, and in this way only can the situation be saved. A well known psychiatrist has even gone so far in some cases as to recommend that children be taken out of the home entirely, even when the only disadvantageous feature of the home environment is an over-dominating parent. Sometimes the situation can be rationalized through the parents themselves. Very often, however, this is not possible because the traits which have produced the unfortunate results in the child are the ones which make parents obdurate to any discussion implying blame on their part.

The second type of home influence producing abnormal child development is just the converse of the first—insufficient home guidance and attention. Some parents believe that the child's development should be absolutely untrammelled.[20] Other parents, because of their own marital difficulties and not because of any particular theory on the matter, leave children to their own devices. This training of necessity produces an independence which is lacking in the child who has been too rigorously supervised. But it is not always the rational or balanced independence which has been set up as a desirable objective. It would be difficult to tell which of these unpsychological extremes produces the less advantageous results. From the standpoint of being able to fight one's way in the world, probably the neglected child is the better off if he survives.

Many parents who realize the problem are hard put to it to decide just where the line should be drawn. The question frequently arises in parent-teacher discussions as to how much freedom should be allowed children. It is comparatively easy to state the general principle of progressively relaxed disci-

[20] Ethel Edith Mannin, *Common Sense and the Child* (J. B. Lippincott Company, 1932).

pline but it is somewhat more difficult to determine the gradations of relaxation. The obvious criterion is the child's own conduct and the extent to which it is resulting in successful adjustment. Then, too, the nature of the individual child must be considered. Some children are staying alone at home at night entirely unsupervised without any undesirable results occurring at an age when children in another family are left only under the supervision of a guardian.

Children with self-learned and unguided independence should be given opportunities to work in groups where cooperation is the keynote. They should engage in activities which are unobtrusively but systematically supervised. An important consideration to be regarded in dealing with both sub-autonomous and super-autonomous children is the development of the desired result by easy stages.

Another home condition which produces unfortunate habits in children is incorrect or insufficient early conditioning. As a usual thing, this takes the form of faulty information on vital topics, particularly sex education. There is no more generous contributor to the fund of human abnormalities than the perversions arising from the thwarting of the sex instinct. Furthermore, it is a topic upon which children must have information. Unlike many phases of the curriculum which may be included or omitted as one's philosophy of education dictates, information on the biological aspects, elementary philosophy and social ethics of sex must be given children at a comparatively early age. That an inescapable curiosity on these matters exists, the scientific study of the phenomenon of narcissism and similar tendencies proves. Bianchi has pointed this out clearly.[21]

[21] Leonardo Bianchi, *Foundations of Mental Health* (D. Appleton and Company, 1930), p. 137. See also Mannin, *op. cit.*

Opinion is divided as to whether sex information should be divulged by the school or the home. In spite of the good work done in many schools in sex education, it must be said that the home is probably the best place for furnishing such information. This is because the relation between mother and daughter and father and son is, on the whole, more favorable for the correct reception of such information than is the teacher-pupil relationship. But many parents do not possess the correct information themselves. Therefore, although the responsibility does not rest primarily with the teacher, there is ample opportunity for supplementary and corrective work.

A psychological circumstance in the home which is often detrimental in its results is the desire of some parents to live vicariously through their children. In so far as this implies vicarious happiness in children's enjoyment it is a legitimate desire. Often it goes much further. The father may have wished to be a lawyer. He has not been able to achieve that ambition. It remains in his life an unfulfilled desire. Therefore, what more natural than that he should encourage his son to become a lawyer? Mother may have wished to become a famous opera singer. Marriage cut off her career. What more natural than that she should bend every effort toward a long delayed marriage for her daughter and a career as an opera star. This train of events in hundreds of homes causes untold grief for frequently the desires, not to mention the abilities, of the children are not in the direction of the parental ambitions. Mild tempered and docile children often become weak fulfillments of their parents' wishes. Spirited children usually revolt and, if they do not leave the home entirely, at least produce an unhappy home situation through their persistence in following their own inclinations.

It is perfectly legitimate that the parent should have some

authority as to the direction which the children's training is taking. But it is not fair to the child to have to spend a lifetime attempting to embody the thwarted hopes of the parents. It is true that in some societies as in the caste system in India, children are expected to follow exactly the same occupation as their parents and, for the most part, do so without any question. On the assumption that early training is of vital importance in determining later life careers and since the early training is in the hands of the parent and the child is the helpless recipient, it is possible, especially when a whole national philosophy is directed toward that end to maintain a high regularity in the extent to which children follow in the footsteps of their parents. This idea is not in accord with American ideals or practice. As a matter of fact, it is often doomed to failure even in countries where the tradition is well established as the sixty million outcasts or "untouchables" in India, to which reference has been made, eloquently testify.

Lastly, poor physical conditions in the home are often a cause of abnormal development and jeopardized chances for success. So important is this item in the eyes of many school administrators that it has been made the subject of intensive study. Williams, in "A Guide to the Grading of Homes," lists the following main points to be observed.[22] Provision for:

(1) Necessities
  (a) Income
  (b) Food and clothing
  (c) Shelter
  (d) Furnishings
  (e) Comfort

(2) Neatness
  (a) Healthfulness
  (b) Orderliness
  (c) Sanitation
  (d) Exterior arrangement

[22] J. Harold Williams, *A Guide to the Grading of Homes* (Department of Research, Bulletin No. 7, Publications of Whittier State School, Whittier, California, 1918).

(3) Size
  (a) Accommodation
  (b) Arrangement
  (c) Convenience
  (d) Number of residents
  (e) Exterior
(4) Parental conditions
  (a) Character
  (b) Harmony
  (c) Cause of separation
  (d) Extent to which parents remain at home
  (e) Type of adjustment
(5) Parental provision
  (a) Interest shown
  (b) Methods of discipline
  (c) Fairness of treatment
  (d) Parental example
  (e) Extensions of supervision

In addition to the points herein briefly enumerated, the research bulletin is accompanied by many sub-headings and explanations of the way in which grading should be done. There are difficulties, of course, which will be encountered in any attempt to use such a system of home grading. All parents would not coöperate. Some would be openly resentful. Many types of home conditions which are easily susceptible of remedy are the result of ignorance rather than malicious intent. In these cases suggestions would be gratefully received. In extreme cases, it is sometimes necessary to resort to drastic methods for the improvement of home conditions such as removal of the child to another environment.

In general, although there are many types of home conditions which are not conducive to the best pupil development and which lead to abnormalities, either of body or mind, parents on the whole are anxious to coöperate. One of the worthy functions of the teacher is to be familiar with the literature which covers the particular needs of the community. It is then possible to inform parents either indirectly or by direct reference to sources. For example, statements of established facts on diet are readily available but are not known to many housewives. When school children exhibit evidences of a poorly balanced diet, this information can be made available to mothers.

Pupil Influences Producing Pupil Abnormalities

Pupils influence each other greatly, sometimes detrimentally. Following are some possible harmful pupil influences:

1. Ridicule. The primitive reactions of children often resemble those of animals. As the pack turns on the wounded member, so do children often turn upon those who are less fortunate among them. This is not a studied cruelty, but rather the thoughtless response of those who have not learned through experience the lessons of tolerance and consideration. It is common for children to make fun of peculiarities, either physical or mental. This is more true of younger than older children. This fact does not ameliorate the situation, since abnormalities may have their genesis early as well as late. Ridicule may take the form of nicknames, and the nickname is a brand which sometimes has an actual effect upon personality. It is comparatively useless for the individual to fight this type of pressure. He must be aided by a friend and this friend is the teacher. Good-natured sport at one another's expense is not necessarily harmful among school children, but group pressure brought to bear consistently on one individual is apt to be harmful in its effects. It often leads to introversion and sometimes to suicide. Psychologically it is not progressive conduct but atavistic for its nature is that of the lower order. The teacher should discourage such tendencies.

2. Gangs. In some ways the gang is a unique organization. Like all groups it is more than a mere collection of individuals. There are those who maintain that the gang makes a valuable contribution to the social development of boys. But it is likely to be a detrimental influence in the lives of many of its members. It may be the beginning of "cliquishness." It may aug-

ment the destructive tendencies of its members. The good features of the gang are coöperative activity and opportunity for play. The gangsters in large cities are the outgrowth of gang life where it has flourished unsupervised and untrammelled. The mob illustrates the type of abnormal outgrowth to which the gang may lead. The prevention of abnormal and harmful gang activities is the task more of the administration of the school than of the individual teacher. The superintendent or principal should provide organizations which accord the advantages of coöperative group activity among boys at the same time avoiding the undesirable results of gang associations. This is difficult to do and it sometimes involves the extension of the school's authority over a fairly wide scope, for gangs frequently or, in fact, usually are not confined in their operations to the school grounds. In most high schools secret fraternal organizations are forbidden, because they tend rapidly to become more gang in nature than otherwise. The psychological advantages of gang life may be as well or better secured by team or club. Over-participation in an activity, such as athletics, may result in harm physically and psychologically. This is a risk which must be taken, and poor results occur far less frequently than in the case of gang life. In fact, it may be maintained that one of the advantages of the extreme emphasis upon athletics which has taken place during recent years is that competition in a large number of athletic sports during all seasons of the year has diverted the attention of thousands of young men from other less desirable associations.

3. Over-competition. Over-competition is not likely to occur in the ordinary classroom. It may perhaps occur in matters of dress among girls. It may appear in demonstrations of physical prowess among boys. It is found in the social re-

lations of young people, as witness the girl who is overly popular with consequent detriment to herself.

Some schools are so concerned with this factor of over-competition that in places where it is most likely to occur and is most apt to be damaging, standardization is prescribed. Standardized dress among girls in high school and junior high school is not uncommon, although by no means the rule. Such standardization may lead to a certain drabness and monotony, but it avoids competition which becomes at times almost frantic. When such competition gains headway, it carries the whole group with it, and those who are at a disadvantage because of inability to keep up financially or by inclination suffer. At present, there is a tendency to minimize the importance of competition on athletic teams. In football, competition, even among high school teams, has reached such a height that a number of deaths result each year from over-competition. The desire to win sweeps all else before it. This is an abnormal condition. It does not prevail in all countries. In some places athletics are regarded as means for preserving the health of the whole group and such competition as does exist is to provide a reasonable amount of motivation and not to emphasize the doctrine of "win at all costs." Over-competition may be called an almost fundamental characteristic of the American people. It probably accounts for the way in which they sweep through the Olympic games. It just as likely accounts for the increasing number of neurasthenics, suicides, and murders.

4. Bad habits. Bad habits are, in themselves, abnormalities. They are abnormalities according to the social norm, and they are abnormalities according to the individual norm, for they hinder progressive conduct and adjustment. Pupils catch bad habits from each other, as, indeed, do adults. A wave of

giggling over a schoolroom is an obvious example of the way in which semi-hysterical reactions may spread rapidly over a group. Burnham gives examples of other more serious sorts.[23] The important point to be observed from the teacher's standpoint is that frequently the child does not realize the serious nature of the bad habit or perverted practice which is being indulged. Therefore, its source can not always be regarded as malicious but rather as unwitting and dangerous. The technique in handling a case of social pathology is no different than that which the physician uses in treating a case of disease in the individual. The focal point must be located and the remedy applied there. In extreme cases this may mean segregation of individuals at cost to themselves but of benefit to society. The techniques for the scientific treatment of psychiatric problems are being refined and stated in more practical ways as indicated by such work as that of Patry.[24]

Character Education

In the evolution of the American school system it has come to be recognized that the older function of the school, training for the professions, has been greatly enlarged and expanded. Especially is this true in the social aspects of the school.[25] In the early days of American education when the group was selected and comparatively small the importance of character education was not stressed. Modern industrialization, however, has made such emphasis necessary. In spite of the fact that there are those who believe that all character training

[23] W. H. Burnham, *The Normal Mind* (D. Appleton and Company, 1924).

[24] Frederick L. Patry, "Psychiatry and Methods in the Junior High School," *High School Teacher,* VIII (1932), 337–339.

[25] Francis F. Powers, "Recent Trends in Character Training," *Junior-Senior High School Clearing House,* V (1931), 591–592.

should take place in the home, it is impossible for the school to avoid direct responsibility in this connection.[26] Furthermore, character education is one of the most important methods by which it is possible to prevent pupil abnormalities and to teach corrective mental hygiene.

The best efforts which the school can make along the lines of character education do not consist of classes in direct character training or moral education. It is recognized that, while incidental character education is likely to be more or less accidental as well, the direct effort in the sense of classes which teach precepts only is largely futile. The importance of making some attempt is attested by the fact that the Tenth *Yearbook* of the Department of Superintendence is devoted entirely to the subject of character education. School administrators naturally have a practical outlook on such problems and this is reflected in the *Yearbook*. The subjects considered in this *Yearbook* are as follows:

(1) Analysis of American life from the viewpoint of character education,
(2) Agencies of character education,
(3) Objectives of character education,
(4) Theory of character education,
(5) Research related to character education,
(6) Character education and the curriculum,
(7) Sex education,
(8) How classroom procedure may contribute to character education,
(9) Character education in the life of the school,
(10) How individual counseling may contribute to character education,
(11) The teacher in character education,
(12) How the organization of a school system is related to character education,

[26] Francis F. Powers, *Character Training* (A. S. Barnes and Company, 1932), pp. 17–30.

(13) The administration of the school system in relation to character education,
(14) Home and school coöperation,
(15) The relation of the school to other organizations and institutions interested in character education, and
(16) Tests and measurements in character education.[27]

In the above list of topics, it will be seen that the most representative administrators look to the curriculum, the classroom, the life of the school, the guidance program, the teacher, the general school organization, the administration of the school, the home, and other institutions for coöperative endeavor in character training. Such coöperative endeavor is the keynote of the modern effort toward character training, which is defined as "the discovery or creation of a way of living which conserves and produces as many values as possible for as many persons as possible over as long a time as possible. Character education is the facilitation of this way of life." [28] This definition takes cognizance of the following important psychological considerations.

(1) Exploration
(2) Creative ability
(3) Conservation of culture
(4) Estimation of values
(5) Democracy
(6) Enduring qualities

Another fundamental notion in the modern theory of character education is the psychological attitude which holds that character training is no different from any other field. It has been pointed out in Chapter III that social competence implies progressive social conduct in growth. Personality and character development are phases of the acquisition of social competence and are likewise social growth. It would be a

[27] "Character Education" (Tenth *Yearbook,* Department of Superintendence, February, 1932), p. 7.
[28] *Ibid.,* p. 59.

happy situation for schools and school teachers if character were an innate matter. If this were true, teachers' responsibility as well as parents' would not exist. Social psychology, however, makes it clear that the ordinary principles of learning apply in the development of personality and character as well as in the learning of arithmetic and spelling.

Since character development is a regular learning process, it may be analyzed in terms of learning processes and may be inculcated by means of regular teaching procedures modified to meet the particular needs at hand. Three essential phases of the program must be present.

1. A definitely outlined set of objectives. These need not and probably will not be the same in all communities and in all schools. Character may be variously defined from the social, ethical, religious, or psychological points of view. Since the school is a social institution, it is extremely reasonable that in many cases the definition will be in terms of social mores, conventions, and accepted customs. Many schools have their own codes which are prepared by the students and which are kept constantly in view. These state the objectives and ideals of the particular school.[29]

2. A definite method of procedure. It has been shown time and again that mere theoretical knowledge of a set of ideals or standards is not sufficient to guarantee conduct consistent with these views.[30] Therefore, whatever the set of character and citizenship objectives may be, it is necessary to formulate a definite set of teacher and pupil activities which are directed

[29] A. C. Roberts, and E. M. Draper, *Extraclass and Intramural Activities in High Schools* (D. C. Heath and Company, 1928), p. 66.

[30] F. F. Powers, and H. R. Taylor, "Bible Study and Character" *Journal of Genetic Psychology,* XXXV (1929), 294–302. See also Hugh Hartshorne and Mark A. May, *Studies in Deceit* (The Macmillan Company, 1930).

toward encompassing the ends sought. This is neither a vague nor an impossible task, although it may involve considerable planning and trial and error in the form of changing programs after checking results. Hartshorne and May give an excellent set of techniques by which one's procedure may be guided.[31] The work of these investigators makes it clear that an effort in character education is distinctly worth while since, in the matter of deception alone, wide differences exist between schools and between teachers in the same schools, in the extent to which pupils conform with socially desirable standards of conduct.

3. The technique of measurement. It is necessary also to have a systematic method of checking the extent to which objectives are being attained. This is the function of measurement. There are two general types of measurement. The first is the method of observation and inference. Although subjective, this can be very valuable. The second is the method of objective measurement. Recent years have brought forth a number of helpful tests of personality and character. Any administrator or teacher who is planning a program of character training can obtain such material at reasonable cost.[32]

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[31] *Op. cit.,* pp. 327–329.

[32] "Tests of Personality and Character," *Review of Educational Research,* II (1932), 183–270.

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(See also references for Chapter XII.)

CHAPTER XIV

PRINCIPLES OF INTEGRATED ACTION

The foregoing chapters have attempted to enunciate the general psychological principles underlying human action especially as it is exemplified in the school. Conduct in its genetic and developmental phases has been the key theme of the discussion. Certain topics, sometimes found in educational psychology such as the elementary principles of measurement, have been omitted on the assumption that in most teacher training schools the material is offered in a separate course. Other topics, such as the relation of instinct to education, have been treated in somewhat abbreviated form. The attempt throughout has been to indicate the principles underlying systematized and integrated conduct on a mature level. The aim has been to have the treatment practical in the sense that the discussion has been confined to principles actually functional in school life. No effort has been made to make specific application of all the principles throughout the ramifications of any or all subjects. This task is that of writers on special methods.

The theme of the book may be summarized in the following general theses:

1. Education is a continuum of conduct and behavior changes over which the school and the teacher exercise partial regimen.
2. The classroom is a socio-psychological situation in which the teacher stands in the rôle of arranger and director.

3. The improvement of the teacher-pupil relationship is as much a psychological problem as a methodological one. Mursell correctly inveighs against the opinion that method can serve as a cure-all for inefficient teaching.[1] The tendency of method is to place the emphasis upon the teacher, whereas the psychological emphasis is upon the pupil.
4. Conduct acquires its maximum educational significance only when it is appropriate for the pupil.
5. Education as the progressive direction of progressive conduct is carried on with certain assumptions always in mind. These are:
   a. That certain situations constitute "best" living.
   b. That through the process of conditioning the learner may approximate these desirable conduct patterns.
   c. That pupil analysis is possible through exhibited conduct and that guidance may be based upon this analysis.
   d. That, having discovered the needs of the pupil, it is possible to provide a suitable curriculum.
6. Education is not the manipulation of single stimuli. It is the control and transposition of entire situations. The situations involved affect the entire learner. Not only the Gestalt psychologists, but Thorndike, Judd, Watson, etc., all recognize this fundamental point.
7. The psychological "self" is an emergent. It emerges from a synthesis or combination of many sorts of basic training. The personality essence is the result of the combination. In school teaching, particularly in the field of guidance, much attention must be given to the alteration of these combinations in the effort to adapt training to the individual learner's psychological matrix.

[1] James L. Mursell, *The Psychology of Secondary School Teaching* (W. W. Norton and Company, 1932), p. 14.

8. Human behavior, although containing many variables, is susceptible of prediction. This has been emphasized by Watson.[2] Thus college entrance requirements are set up solely on the theory that the high school graduates' college performance may be predicted from his high school record.
9. Some of the basic physiological and mechanical units of conduct are known. They are known both as to structure and function. The teacher should have a reasonable knowledge of this neural basis of behavior.
10. One of the basic facts in the foundations of conduct is the proposition that human activity is not spontaneous. This principle, known as the reaction hypothesis, has been reiterated in several different forms but essentially it is the same in all. Some physiologists, it is true, maintain that protoplasm or living matter is not merely the mechanical conductor of stimulation but that it actually seems to "reach out and search for stimulation." This may be true of the nature of protoplasm, but the building up of elaborate conduct patterns waits not upon this principle but upon stimulation either from within or without.
11. Conduct may either facilitate or interfere with itself. Conduct may be said to interfere with itself when previous conduct inhibits the response tendency to present stimulation.
12. Original mental equipment is primarily to be found in the nervous system.
13. Original affective equipment is primarily residual in the ductless glands.
14. Original social equipment is not in the form of a social or gregarious instinct but is composed rather of more elementary orientations and avoidance responses which are the

[2] John B. Watson, *Psychology from the Standpoint of a Behaviorist* (J. B. Lippincott Company, 1919).

bases for early conditioning, which in turn is the basis for later conditioning.

15. The growth of mental functions is a continuous process.
16. The mental functions are problem-solving, acquisition of knowledge, acquisition of skill, social competence, creative activity, and æsthetic experiencing.
17. Given conduct, including school work, is best done when motivated. Motivation is partly native in the form of certain innate interests and satisfying states of affairs. Motivation is also partly learned. Learned or transferred motivation must be used often by the teacher. Various types of motivation are economic, social, religious, idealistic, hedonic, compensatory, ambitious, pathological, rationalistic, and that based upon capacity.
18. Socialization is prominent in all educational activities. In general it may be said that the direction of social adjustment is from ego-centric to socio-altruistic.
19. The teacher acquires maximum significance in the learning situation as a director. Experimental evidence indicates that the teacher does not actually pour or transfer content.
20. Since the teacher is only one of the factors which influence child development, the good teacher acquires significance in the conduct situation in accord with the extent to which she is skillful in manipulating other factors.
21. Teachers should keep careful record of their own progress by such methods as pupil ratings, self-evaluations, standardized tests, opinions of parents, and advice of supervisors.
22. The teaching act should facilitate, simplify, and integrate the learning.
23. Through curricular pursuits the child advances to the cultural level of his existence. The curriculum may be termed

merely the systematically reorganized fragment of the social heritage calculated to produce this result.

24. The functional attitude toward curricular pursuits is most in accord with the psychological nature of conduct.

25. Learning is the mechanism of progressive conduct. It is an involved and complicated process which seems to proceed according to certain fairly definite principles. Some of the best recognized of these principles are the principle of readiness, the principle of effect, the principle of exercise, with the corollaries of recency, vividness, and intensity.

26. Generally speaking, although differences occur at various ages, human beings may be said to be capable of great amounts of learning at all stages of their existence.

27. The psychology of learning in the school subjects comprises in its widest scope the treatment of special methods in these subjects. All subjects, however, have certain common psychological characteristics.

28. All school subjects are cumulative and sequential in nature. One task of the teacher is to determine the size of the accretion units in the cumulative process and the sequential order of the same.

29. All subjects should be taught to secure the maximum transfer values. A complete re-examination of the problem of transfer and methods of securing more efficient transfer is now in order.

30. Mental functions are susceptible of training by all subjects although different subjects contribute different amounts to different functions.

31. Normal conduct may be judged from several points of view. Some of these are the socio-individualistic, the psychological, the legal, the ethical. The teacher should be con-

cerned more with realizing the maximum potentialities of the student than in arbitrary classifications of any sort.

32. Abnormality is not strictly a psychological category. The task of the teacher is to recognize the various types of abnormality and to be prepared to deal with these in the most effective way possible within the limitations of the equipment at hand.

33. Integrated action is the result of progressive pupil activity directed toward understood objectives by an intelligent and sympathetic teacher.

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